

1895



1935

Praise, Criticism For Safety Effort

Greatest Responsibility Motor Industry's, Roper Says, Opening Conference

The automobile industry's efforts for greater highway safety were both praised and criticized by Secretary of Commerce Daniel C. Roper Wednesday in Washington as the Accident Prevention Conference was launched. The commerce head placed the larger share of highway safety responsibility squarely upon this industry, praising it for the steps already taken to cut the national death and accident toll but critical because "their educational efforts are evidently not adequate to meet the need of the public."

This conference was convened by Secretary Roper at the suggestion of President Roosevelt, who in a letter to Mr. Roper, stated that accidents constitute one of the greatest national problems. More than 500 delegates were in the capital for the opening session Wednesday and the meeting rapidly took on the complexion of a nation-wide drive to cut the tolls of death and injury on land, sea and the air. Among the conferees were governors of 25 states, representatives of a score of national organizations interested in the

(Turn to page 813, please)

Stout Steps-Up Production; Making Experimental Run

In an effort to meet the reported demand for Stout Scarabs, manufacture has been speeded to the utmost by increases in personnel and machinery, and jig and fixture equipment is being designed and added as rapidly as possible. Mr. Stout left Dec. 17 on an experimental and business trip through the Southwest in the first of the new series models. Mr. Stout has planned to test under road conditions he has in mind for future models.

Phila. Impounds Cars In Fatal Accidents

Charles E. Hersch, Philadelphia coroner, has adopted a policy of impounding all cars figuring in fatal accidents in an effort to stop the rising tide of fatalities. This new policy is being worked in cooperation with the Philadelphia police and the Pennsylvania State Highway Patrol.

In This Issue

<i>Finding Out What the Consumer Thinks About the New Cars</i>	818
<i>Bonded Rubber - to - Metal Parts for Automobiles..</i>	822
<i>Buses Will Inevitably Replace Street Cars</i>	826
<i>Planning of Retail Distribution</i>	829
<i>New Crisis Demands Employers Show Leadership to Labor</i>	830

Plan Grand Rapids Fisher Body Plant

To Manufacture Dies, Stampings in Proposed \$7,000,000 Operation

Plans for construction of a new plant at Grand Rapids, Mich., to produce dies and body stampings for various General Motors passenger cars are announced by Edward F. Fisher, general manager of Fisher Body, who revealed that expenditures for this new industrial activity eventually may exceed \$7,000,000.

The factory, which will be known as the Grand Rapids Stamping Division of General Motors Corp., is to be operated by the Fisher Division of the

(Turn to page 813, please)

"I Bought a Car for Xmas"



Says George S. Derry, Sr.
See page 113

Used Car Stocks Near '29 Level

Manufacturers, Dealers Centering Sales Efforts on Present Inventories

BY HAROLD E. GRONSETH

In line with expectations, the unprecedented fall activity of the new car market has brought rapidly mounting stocks of used cars, and dealers throughout the country now are carrying heavier inventories than at any time this year. By December 1 stocks had risen to an estimated 446,000 units, representing an increase for November of roughly 80,000 vehicles and in the neighborhood of 11,000 units over the previous 1935 peak on April 1.

In some quarters it is feared that, despite the attention being given the problem, stocks by mid-winter may approach the all-time high of upward of 600,000 units reached in 1929, at which level they undoubtedly would result in repercussions on new car sales. It is idle to predict just how heavy a load dealers will be able to carry through the winter. The situation this year differs in many respects from that of 1929. The more readily available funds to finance new cars this year permits diversion of more dealer capital into used car inventories. On the other hand, relatively more capital also is required for han-

(Turn to page 812, please)

Franklin Foreclosure Waits on Title Search

Mayor Rolland B. Marvin has directed the corporation counsel of Syracuse to foreclose on the former H. H. Franklin Manufacturing Co. plant for non-payment of taxes, but search of title preliminary to the action has not yet been completed. Meanwhile Franklin Motors, Inc., is in litigation between principals in new control of property.

Further details in the development of this matter will be announced by Syracuse officials some time next week.

Lansing Fisher Factory Builds Chevrolet Bodies

The Lansing unit of the Fisher Body Corp., which takes care of body requirements of Olds Motor Works, will make bodies for one model of the 1936 Chevrolet line, according to announcement made by George C. Paterson, Lansing Fisher plant manager.

Artisan-Artist Envisages Industry



The original of this picture, a three by five foot canvas, was done in oils by Thorvald C. Olson, a crankshaft grinder in the Chevrolet motor plant at Flint, Mich., and was presented to Arnold G. Lenz, plant manager, by a group representative of all employees. Mr. Olson, who paints as a hobby, has never had a lesson in art.

Auto-Lite Union Workers Ask Rise, New Contract

A new contract the United Automobile Workers (A. F. of L.) have submitted to Electric Auto-Lite Co. to replace the present agreement, which expires Dec. 31, calls for a boost in the minimum hourly rate from 50 to 70 cents and 10 cents an hour increase to all receiving more than 70 cents. It is understood negotiations will be postponed until after expiration of the present agreement.

The management has contended that Auto-Lite wages now are the highest in the industry.

L-O-F Workers Negotiate New Contract, Wage Rise

More than 6000 workmen for the Libbey-Owens-Ford Glass Co., large makers of safety glass for automotive consumption, will receive a pay increase of about 5 cents an hour effective Dec. 16 as a result of a new agreement made between the company and the Federation of Flat Glass Workers. The term of the agreement is one year. Two plants at Toledo, another at Ottawa, Ill., and window glass plants in Charleston, W. Va., and Shreveport, La., are affected by the contract.

Some regional differences in pay were also adjusted in the new contract. One group in the window glass department was jumped from 39 to 53 cents an hour.

The six-hour day is effective in all of the plants with those doing non-continuous work on a 36-hr. week and

those engaged in the continuous processes 42-hr. week.

The agreement also provides for a uniform promotion system based on seniority and for use of seniority in event of layoffs or replacement after layoffs.

Glen W. McCabe, president of the federation, who recently negotiated an increase for employees of the Pitts-

Toledo GM Workers Seeking Jobs For 900 Men; Charge Intimidation

A. G. Gulliver, manager of the Chevrolet Toledo plant, replying to charges that transfer of transmission work from this to other General Motor's plants was an "attempt to destroy the local union and to intimidate other General Motors plants from engaging in union activities" and that workers' representatives have been unable to obtain further concessions from the management for the restoration of 900 dropped workmen, pointed out that the plant's schedule had been revamped to provide 30 hours employment per week for 1400 workers and that he could go no further in providing for the 900 who were left out when the corporation diversified the plant's output.

The shop committee of the United Automobile Workers Union of the American Federation of Labor in negotiations recalled that M. E. Coyle, president of Chevrolet, had objected to certain members of that body and it was offered that they would resign or all the committee would resign if the

burgh Plate Glass Co., represented the men and David H. Goodwillie, executive vice-president of the Libbey-Owens-Ford Glass Co., represented the company. Committees of the men from each plant also sat in on the negotiations.

Total wage boost involved in the contract is approximately \$500,000 for the year.

Gains in business as a result of the construction industry pick-up are expected to offset the wage increase for the most part.

New International Marks Set in 1½ Litre Category

A group of new international records in the 1½-litre category was established at Avus last month by an Adler-Triumpf, with P. von Guillaume, Heckel, Böttskes, Lohr, and Haase as drivers. The car was equipped with a 4-cylinder engine, bore and stroke of 75.85 mm. and 95 mm. (2.785 in. x 3.74 in.), having a piston displacement of 91.5 cu. in.

The records covered distances from 3000 miles to 10,000 kilometers, as well as for 48, 72 and 96 hours. The best speed recorded was 79.90 m.p.h. for the 4000-mile distance. Distance covered in 96 hours was 11,875 kilometers at an average speed of 76.86 m.p.h.

Knudsen to Speak

W. S. Knudsen, executive vice-president, General Motors Corp., will address the Detroit Engineering Society on Dec. 20. His subject is announced as "Manufacturing."

company would promise to restore all workers to jobs in the Toledo plant on a basis of not less than 30 nor more than 40 hours a week within 60 days.

Mr. Gulliver said no more could be employed in the Toledo plant regardless of the composition of the shop committee.

The men held a meeting Saturday to discuss the result of negotiations but took no action. They will meet again next week.

Mr. Gulliver made it plain to the men that General Motors does not transfer employees from one city to another. It is policy to hire local labor if available, and the company does not give recommendations to anybody.

James Roland, chairman of the executive committee, in reporting for the committee said:

"The committee believes that the action of the Chevrolet company in removing machinery from the Toledo plant, thereby throwing 900 men out of

(Turn to page 810, please)

National Media Back Used Car Sales Plan

Chevrolet Campaign Opens With Newspapers, Posters And Radio Aiding Dealers

"Volume sales of new cars depend upon volume sales of used cars," William E. Holler, Chevrolet's vice-president and general sales manager, told the company's dealers in a broadside

What Chevrolet is doing To Build Used Car Sales

- 1—A countrywide used car advertising campaign.
- 2—Combination display and classified used car advertisements in the nation's greatest newspapers, starting Dec. 15.
- 3—10,000 billboards posted Dec. 15.
- 4—5147 radio broadcast commercial "spots" in "Musical Moments" programs devoted exclusively to used cars, starting Dec. 15.
- 5—Nationwide prestige building used car advertising campaign in the nation's largest magazines, starting Jan. 4.

letter outlining the used car sales campaign launched Dec. 15 and continuing to Jan. 15.

Adopting the slogan—"The Choice Used Car Buying Has Changed—it used to be February and March—now its December and January, the reason—early new car announcements"—the company will promote the drive with national advertising in standard media. Mr. Holler's letter urged dealers to (1) condition used cars immediately; (2) price them low because price is important in used car sales; (3) display cars attractively in show rooms and on lots; (4) advertise cars consistently, using the company's theme (already quoted) in local advertising; (5) put same sale management and same adequate man-power behind used car sales as that back of new car sales.

NRA Lops 1250 Workers From Skeletonized Staff

Demobilization of the National Recovery Administration is under way. By recent orders of the acting administrator 1250 employees of the 2300 still in the skeletonized organization have been notified of their dismissals. Most of the dismissals become effective Jan. 1. The sharpest reduction was in the Division of Review under the direction of Leon C. Marshall. This division makes industrial surveys. By reason of the dismissals some of the surveys will be substantially curtailed. Others are virtually completed so far as collection of material is concerned. They are yet to be correlated and in-

terpreted. Those regarding major industries will be made public later, perhaps in two or three months.

The dismissals now ordered will leave N.R.A. with a personnel of about 1050 of which 900 are in Washington and 150 in the field.

The order entirely abolished the so-called Government contracts division, which had been set-up in anticipation of passage of the Walsh bill. The measure would have required adherence to code wages and hours by concerns making contracts with the Government. It is expected that organized labor will again urge passage of the bill at the coming session of Congress. In the event of its enactment it is likely it would be administered by a division in the Department of Labor.

Textile Problems Topic Of Detroit SAE Session

For the first time in the activities of Detroit Section, Society of Automotive Engineers, technical session was devoted exclusively to the manufacture and control of textiles, thus rounding out the discussion of basic raw materials. The session held this week was arranged by V. P. Rumely of Hudson, vice president of the S.A.E. in charge of the Production Activity.

The program included three speakers representing the American Woolen Co.—E. A. Adams, Jr., H. C. Templeton, and Henry D. Grimes. Mr. Grimes, the company's chief chemist, described the variables that beset the textile manufacturer and concluded by showing how science is being impressed to convert the variables into constants.

Fruehauf Fights Labor Board Rule

Appeals Court Asked to Review Orders to Rehire 7 Discharged Employees

Fruehauf Trailer Co. has filed an appeal from the National Labor Board's cease and desist order with the Circuit Court of Appeals, and the board, at the same time has appealed to the same court for enforcement of the order.

The board has ordered Fruehauf to reinstate seven employees allegedly discharged for union activities and further ordered the company to cease and desist from "interfering with its employees in the exercise of their rights to join labor organizations or to bargain collectively through representatives of their own choosing." The board's order also requires the company to "end employment of detectives to report on union activities or become members of any labor organization for the purpose of obtaining information."

This is one of the first cases heard by the board headed by J. Warren Madden and created by the Wagner Labor Disputes Act. Hearings in the case were held Nov. 6 to 8 in Detroit.

Complaints against Fruehauf were entered by the United Automobile Workers Federal Union No. 19375, American Federation of Labor. The board was asked to instruct the company to end practices tending to discourage union membership and from threatening discharge of employees because of such membership. The two complaints were consolidated at the hearing when the

(Turn to page 812, please)

Sloan Will Get Medal to Ford Music



Philadelphia's Poor Richard Club awards Alfred P. Sloan, Jr., Gold Medal of Achievement for contributions to national advancement; Fred Waring, musician, also will be honored for his broadcasts; presentations will be made in Philadelphia at banquet January 17, 1936

Cancellation of Concessions on U. S. Cars Asked by Canadian Motor Plants

Canadian branches of American automobile manufacturing companies moved this week for cancellation of the concessions made to the United States on motor car tariffs under the recently negotiated reciprocal trade agreement between Canada and the United States. When the Canadian Tariff Board opened hearings in Ottawa, the Canadian Automobile Chamber of Commerce presented a brief asking that the intermediate tariff, which, after ratification of the agreement, would be applied to U. S. cars, be raised from 17½ per cent to 20 per cent, the level of the general tariff. Restoration of the 5 per cent excise tax on imported cars was also asked. This would be reduced to 3 per cent under the proposed agreement.

American companies which are members of the Canadian chamber are General Motors of Canada, Ltd., Chrysler Corp. of Canada, Ltd., Hudson Motors of Canada, Ltd., International Harvester Co. of Canada, Ltd., and the Studebaker Corp. of Canada, Ltd. The chamber's brief stated that under the new agreement the benefits to manufacturers because of reduced tariffs on parts were small compared with the disadvantage under which they would be placed by the lower duty on finished cars. The brief urged that the intermediate rate be raised to 20 per cent and the excise tax to 5 per cent on imported cars.

The brief stressed the value of the export automotive business to Canada, and suggested that it helped keep up the value of the Canadian dollar and thus ease the external debt burden. Profits of the five companies in the chamber were stated to have mounted to only 75 cents a car in 1934. If there were no export business from Canada, prices of Canadian-built cars would be

much higher than now, and it is doubtful if there would be any Canadian-made cars. When asked to disclose their manufacturing costs, these companies refused.

The chief request of the Ford Motor Co. of Canada, whose brief was presented separately, involved the 50 per cent Canadian content required if a Canadian-built car is to receive the drawback on its imported parts, and pay a lower excise tax. Ford asked that this content be increased, in opposition to the brief of its competitors who would like to have the Canadian content requirements reduced on individual products, although still applicable to total production.

The Ford Co. stated that it makes a profit on half of its products which are exported to other parts of the British Empire. In common with other American branch plants, Ford contends that as long as the Canadian market remains so much smaller than that of the United States it will be impossible to render the Canadian automobile industry independent of tariff protection.

Canadian official circles are reported as not taking too seriously the protests from American branch plants. The concessions made on American automobiles were intended primarily to benefit the Canadian car buyer rather than American manufacturers, and there seems to be little prospect of their being cancelled.

Pontiac Zone Winner

Sixteen employees of the Pontiac zone of the Pontiac Motor Co. drove more than 100,000 miles during October and November without accident and thereby received the bronze plaque awarded monthly to the zone in the

company's central region having the fewest number of accidents for the month. This is one of the five plaques (one for each region) which goes to the winning zone in each region each month.

Long-Time Packard Employees Honored

During the past year, 409 Detroit factory employees of Packard Motor Car Co. completed 10 years of unbroken service with the company, the largest group in Packard history, bringing the total number of employees with that distinction to 2040, or 23 per cent of the entire factory enrollment. Twenty-eight per cent of the factory force, or 2456, have been continuously employed by Packard from five to ten years. The number with records of five years or more is 4768 or 54 per cent of the total enrollment.

During the year 66 Packard employees completed 25 years of service with the company. Among them is Alvan Macauley, president, who celebrated his twenty-fifth anniversary last spring. In accordance with an annual custom for 19 years each member of the new class of "ten year employees" was presented with a gold watch, the presentation being made personally by Mr. Macauley. For the ceremony, one of the largest of Detroit theaters was taken over for an entire evening. More than 6000 Packard employees and members of their families were present.

New Slushing Compound Protects Aircraft Motors

A new slushing compound, especially adapted for the protection of aircraft engines from rust in tropical countries (where the atmosphere is often very humid and where even cylinder bores are attacked in consequence) has been developed by Ethyl Gasoline Corp. at its Detroit chemical laboratories. The compound is in the form of a sprayable brown oil which forms a jelly-like film that affords the needed protection to the ferrous surface. It is explained by Dr. George Calingaert, director of the company's laboratories, that before any tests were made on engines, corrosion test specimens in the form of steel plates were treated and exposed to corrosion influences; this was followed by tests on automobile and finally on aircraft engines. The new compound is composed of 5 to 6 per cent of triethanolamine, 10 per cent aluminum stearate, 10 to 12 per cent butanol, and the remainder lard oil.

Sees Better Business

Franklin A. Miller, replacement sales manager for the United States Asbestos Division, Raybestos-Manhattan, Inc., now touring southeastern states, reports all indications point to good business for his company and its products during the coming year.



H. J. Klinger, Pontiac president, inspecting one of the bronze plaques that go to the company's zone in each region having the best safety record at the end of each month; there are five regions and five plaques

States' Gasoline Taxes To Reach \$625,000,000

State gasoline taxes will reach a new high of approximately \$625,000,000, according to estimates of the American Petroleum Institute, based on net collections reported by 33 states in the past nine months. The federal gasoline tax will add approximately \$169,500,000, so that the total national gasoline tax bill, exclusive of county and municipal levies imposed in some localities, will reach the all-time record of \$794,500,000, it is estimated.

Net collections for nine months in 33 states totalled \$324,185,089, which was 7.9 per cent above those of the same period last year. This figure does not include collections of California, which ranks among the four heaviest taxpayers. New York motorists pay the largest tax, which was \$40,876,307 for the first nine months this year, against \$34,137,355 for the corresponding period of 1934.

Total gasoline consumption during 1935 has been estimated by the American Petroleum Institute's department of statistics at 18,150,000,000 gallons, a new high. The retail value of this fuel is estimated at \$2,459,000,000, so that the amount collected in taxes, both federal and state, represents a retail sales tax of between 30 and 40 per cent.

Truckers to Issue Two Classification Editions

Two books of Motor Freight Classification for the trucking industry will be published by the National Rates and Tariffs Committee of the American Trucking Associations, Inc., according to a recent announcement.

One classification will contain less-than-truckload ratings and the second will show ratings for volume shipments. The classification rules are being revised, it has been announced, to conform to the needs and advantages of the industry and descriptions of commodity items are being simplified wherever possible. Present ratings are to be preserved.

The work of preparing the books has been turned over to a committee of about 12 traffic men, representing some of the larger trucking companies. The publication of ratings for less-than-truckload traffic, will provide: eastern territory, classes 1, 2, 3, 4 with additional provision for the class heretofore called R 26; in the southern territory, classes 1, 2, 3, 4, 5 and 6, and in the western territory classes 1, 2, 3, and 4. The edition volume ratings will list quantity weights to coincide with those provided in the classification now most universally used and will show the same ratings for the classes already listed with the addition in the eastern territory of classes 5 and 6 and class 7 in the southern territory and classes 4 and 5 for the western territory.



Neil E. McDarby
Auburn vice-president in charge of sales who died early this week following a protracted illness

Goodrich Co. Issues Tire Equipment Specifications

Original tire equipment specification lists for 1936 passenger cars have just been published by The B. F. Goodrich Co. Copies of the list are now available upon request to the manufacturer.

Study of sizes on the present list indicates that all manufacturers are tending to use smaller rim diameters, and that the range of tire cross sections for passenger cars is becoming narrower.

Legal Quibbles Mark Bendix NLRB Case

Constitutional Questions Raised by Attorneys Ruled Out by Board's Examiner

Questions on the constitutionality of the Wagner Labor Disputes Act involved the hearing held this week in South Bend on the application of Bendix workers to the National Labor Relations Board for a closed shop. John A Lapp, appearing as trial examiner for the Board, ruled that his hearing was purely a fact finding institution and not one at which the law's validity could be considered.

"Passing upon the constitutionality of the law is up to a court. It is our duty to uphold the law as written and our appearance here is our affirmation of the Act," Mr. Lapp said.

There was considerable discussion among attorneys as to what would be permissible evidence. Exceptions were taken to Mr. Lapp's ruling and there were indications that the case will be taken to the courts for a ruling. Bendix Corp. attorneys moved for a dismissal of the case on the grounds of the law's unconstitutional qualities.

The original complaint was filed by the Bendix Federal Labor Union, No. 18,347, an American Federation of Labor affiliate, which claims 2000 membership of the 3000 eligible employees at the South Bend plant.

Independent Union Wrangle Fails To Halt Merger Plans and Meeting

Undismayed by a split within their own ranks and failure of the strike at Motor Products, sponsored by two of the independent unions, leaders in the movement to merge the independents into one big organization to be known as the "Automobile and Metal Workers Industrial Union" were proceeding with plans for their constitutional convention opening in Detroit today (Saturday, Dec. 21).

Developments arising out of the ill-starred Motor Products strike have served further to complicate the jigsaw puzzle of union activity in Detroit's motor industry. For a time it appeared that the Automotive Industrial Workers Association would withdraw from the convention, a majority of the locals of that union voting to postpone the merger for three months. But sentiment now appears to be swinging in favor of immediate amalgamation.

It was the A.I.W.A. and the Mechanics Educational Society that called the strike and a faction of the A.I.W.A. felt that it would be advisable to delay merger proceedings until certain

questions and the general confusion arising from the strike had been settled. The M.E.S.A. and the Associated Automobile Workers of America, which union had not been a party to the strike, favored going ahead with scheduled plans for consolidation. Meanwhile the American Federation of Labor's United Automobile Workers local at the Motor Products plant, whose members had returned to work when rehiring began after a brief shut-down, voted to support the independents.

Instead of walking out, they proposed to "sit down," that is to remain in the plant, but to refuse to work until the management had yielded to their demands to take back the strikers and do away with the police guard now posted at the gates of the plant.

The U.A.W. claims 1200 followers among the 2500 workers which comprise the plant's revamped force engaged on the two shifts it is operating daily. Robert M. Pilkington, a conciliation commissioner for the United States Department of Labor, is in Detroit to settle the dispute.

Employment "Predominant Motive" Of Road Program, Wallace Reports

Emphasizing employment as the predominant motive and pointing out that hours of labor were restricted to 30 per week, manual labor substituted for machine work where practicable and the requirement that all projects be developed in relation to the employment need, Henry A. Wallace, Secretary of Agriculture, in his annual report announces that road construction in which his department participated during the fiscal year ended June 30 last "resulted in the completion of 21,722 miles of roads and streets."

Of this mileage, Mr. Wallace reports, 19,033 was improved with funds administered by the Federal Government solely by the Agriculture Department, and the remainder included 99 miles of national park roads; 2501 miles in loan-and-grant projects of the Public Works Administration, and 89 miles in work-relief projects on which labor was supplied by the Federal Emergency Relief Administration.

According to the secretary, projects in which the department was the sole Federal agency consisted of construction carried out under various appropriations in cooperation with the highway departments of the various states, Hawaii and the District of Columbia. Projects in this class involved 17,344 miles of roads and streets—11,092 miles on the Federal-aid highway system outside cities and 5047 miles classed as secondary or feeder roads. The report also states that other completed improvements included 1232 miles of forest highways and 456 miles of highways through other public lands built by the Bureau of Public Roads and 8962 miles of forest roads and 3242 miles of trails built by the Forest Service.

Federal funds available for road construction, it is stated, were provided by various appropriations with the total of expenditures by the Department of Agriculture amounting to \$290,300,699. Of this sum the largest amount, \$215,083,475, was drawn from the \$400,000,000 earmarked for highways in the National Industrial Recovery Act appropriation; \$44,791,372 was from the \$200,000,000 authorized by the Hayden-Cartwright Act and lesser amounts were derived from the Emergency Relief and Construction Act; Federal-aid highway appropriations, appropriations for forest highways, roads, etc., and appropriations for roads through public lands. These expenditures, however, do not include the \$34,800,000 disbursed to state highway departments in advance payment for work authorized by the NRA and the Hayden-Cartwright Act.

The secretary reports that employment provided amounted to 2,233,855 man-months, equivalent to an average full-time employment of 186,155 men each month. The number of individuals

actually employed averaged approximately 302,350 persons per month. Mr. Wallace estimates that employment through the fiscal year of 1935 will reach 3,127,400 man-months, which, added to the direct employment, results in a total of approximately 5,361,000 man-months which is equivalent to average employment throughout the whole year of 446,700 men.

Chrysler Canadian Prices

Chrysler Six	
4-door touring sedan	\$1,285
Rumble seat coupe	1,215
Business coupe	1,130
Touring brougham	1,215

Chrysler DeLuxe Eight	
4-door touring sedan	1,495
Rumble seat coupe	1,430
7-passenger sedan	1,710
Traveler sedan	1,710

Dodge Six D-2	
4-door touring sedan	1,110
2-door touring sedan	1,055
Rumble seat coupe	1,025
Business coupe	950
7-Passenger sedan	1,375

Dodge DeLuxe Six D-4	
4-door touring sedan	1,005
2-door touring sedan	965
Rumble seat coupe	935
Business coupe	875

Dodge D-3 Six	
4-door sedan	923
2-door sedan	881
Business coupe	822

Plymouth DeLuxe Six P-2	
4-door touring sedan	995
2-door touring sedan	955
Rumble seat coupe	925
Business coupe	865
7-passenger sedan	1,275

Plymouth Six P-1	
4-door sedan	913
2-door sedan	871
Business coupe	812

DeSoto Custom Airstream Six	
4-door touring sedan	1,275
Rumble seat coupe	1,180
2-door touring sedan	1,220
Business coupe	1,125

Hudson Canadian Prices

Terraplane	
2-pass. Coupe de Luxe	\$790
Brougham	870
Sedan	875

Hudson 6-cyl.	
Coupe	945
Brougham	985

Hudson 8-cyl.	
Coupe	990
Brougham	1,035
Sedan	1,050

Studebaker Canadian Prices

Studebaker Dictator	
2-pass. custom coupe	\$920
4-pass. custom coupe	955
2-door St. Regis sedan	955
2-door St. Regis cruising sedan	985
4-door sedan	1,020
4-door cruising sedan	1,055

Studebaker President	
2-pass. custom coupe	1,310
4-pass. custom coupe	1,405
2-door St. Regis sedan	1,430
2-door St. Regis cruising sedan	1,455
4-door sedan	1,460
4-door cruising sedan	1,495

Cetene or Cetane?

There seems to be some confusion as to the proper spelling of the word "cetene," the name of the hydrocarbon used as reference fuel in making tests of Diesel-engine fuels for ignition quality. Occasionally we see it spelled "cetane." The liquid used by Boerlage and Broeze, originators of the "cetene-number scale," is $C_{18}H_{38}$, a member of the unsaturated ethylene series of hydrocarbons, which correspond to the general chemical formula C_nH_{2n-2} . It is also known as hexadecane, and this name has been approved by the International Union of Chemistry. Therefore, the ignition quality of Diesel fuels is expressed in cetene numbers, not cetane numbers.

GM Workers Seeking Jobs

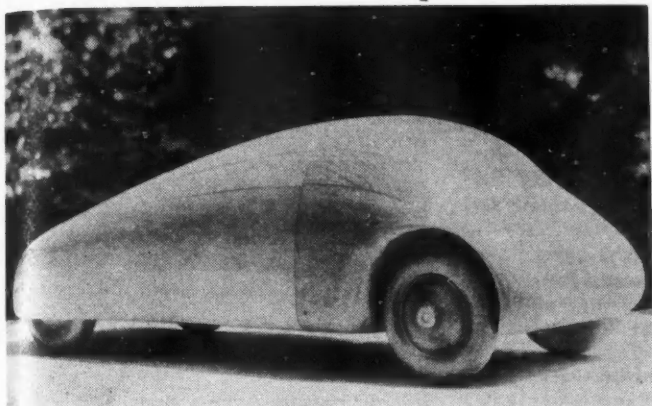
(Continued from page 806)

employment, was a cruel act of injustice and contrary to the law of the land which provides the legal right of workers to organize into unions of their own choosing for the purpose of collective bargaining, and that the move was in fact an attempt to destroy the local union and to intimidate other General Motors plants from engaging in union activities.

"While this strategy may succeed for a while, the committee believes that eventually union organization will follow the machinery wherever it may be located since the movement to organize the automobile industry is just beginning to gain momentum, which even the program of decentralization of the large automobile companies cannot long defeat."

Mr. Roland was removed from the executive committee of the United Automobile Workers Local Union No. 18384 a few months ago for radical activities but has continued as chairman of the shop committee at Chevrolet. Early in the NRA period he conducted a one-man strike and the company was forced to rehire him after once discharging him. He was a leader in the strike at the transmission plant in Toledo which later affected many other General Motors plants.

Motor Products Corp. has declared a 100 per cent stock dividend, payable on Feb. 1 to holders of record of Dec. 20. Two 50 cent dividends were declared on the new stock, the first payable on March 31, 1936, and the second on June 30, 1936. The regular 50 cent quarterly dividend on the present stock, payable on Dec. 31 to stockholders of record Dec. 20, was also declared.



Keystone



Wide World

The World on Wheels

Above — Whale shaped automobile — model of the future — devised by Prof. Elliott G. Reid, Stanford University, after wind tunnel experiments; passengers ride in bulging front with power plant in rear

Center — This automotive "white wing" replaces the man-power street cleaners of Paris; the machines are said to move with great speed



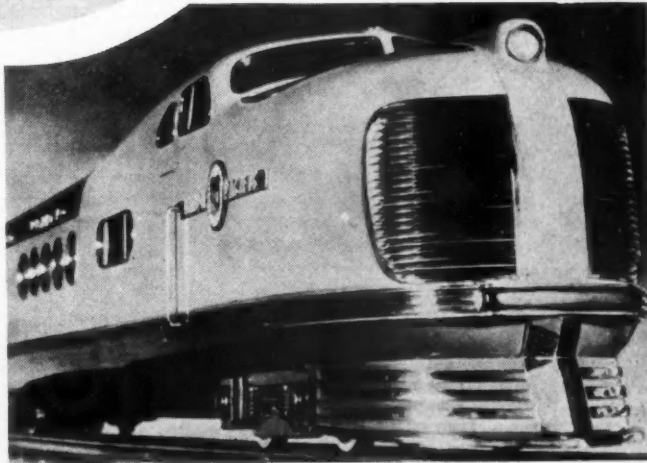
Below — Freak motorcycle and side car built for British Ministry of Transport by Department of Scientific and Industrial Research at Harmondsworth to test type of road surface which best prevents skidding



Globe

Above — The "Puce du Ciel" (Flying Flea) — first midget plane to be constructed in England; the inventor, S. V. Appleby, is at the stick; plane is less than 10 feet across and was built at cost of approximately \$450

Below — Power car of the Union Pacific's new "Streamliner — City of Denver"; two 1200 h.p. Diesel electric units propel train at average speed of 65½ m.p.h. for the 1048 miles between Chicago and Denver



International

Studebaker-Autocar Representatives Confer on Truck Merchandising Plans

Field representatives of the Studebaker truck division and the Autocar Co. of Ardmore, Pa., are meeting at the South Bend plant for a week's conference on plans for merchandising Studebaker's 1936 line of trucks. According to C. H. Wondries, manager of the Studebaker truck sales, there is an important departure from the conventional designs in the new Metro or "cab forward" series of trucks for 1936. Chassis and cab have been designed by Studebaker engineers to provide an efficient and attractive close-coupled hauling unit having advantages never before available in the low price field.

The new type of truck is built in two models known as the Metro Ace and Metro Boss series. Studebaker also announces its standard trucks, the Ace, Boss, Mogul, and Chief, in one and one-half; two to three; two and one-half to three and one-half; and three to four-ton capacities, respectively. A new bus chassis built on the Metro design is added to the standard Studebaker bus for 1936 marketing, both types featuring balance, comfort, speed, high braking power and economy of operation.

Harvard Traffic Bureau Gets \$54,000 from AMA

A gift of \$54,250 from the Automobile Manufacturers Association to the Harvard University Bureau for Street Traffic Research was announced this week. A part of this fund will be used to provide fifteen fellowships of \$1,200 each, plus field research expenses, which will be awarded selected college graduates for one year's study of street and highway traffic control and accident prevention. The bureau was established in 1926, and has been supported principally by grants from the automobile industry. Dr. Miller McClintock has been director since its establishment, and Maxwell Halsey is his assistant.

Used Car Stocks Near '29 Level

(Continued from page 805)

dling new cars since dealers are carrying bigger stocks of these than at corresponding periods of other years when new models were announced in January. It is estimated that on December 1 dealers had 246,000 passenger cars on hand, as against, roughly, 200,000 on November 1, an increase of 46,000 cars. Manufacturers are attacking the used car problem more vigorously than ever before, and opinion is by no means unani-

mous that the picture will become serious.

Officials of some of the more important dealer organizations claim to have the situation well in hand, and with plans being formulated for accelerating the movement of used cars anticipate no serious difficulty before the normally heavier spring buying begins. In one important instance stocks are at a new high, but so, also, is turnover. The sales chief of another leading dealer body reports used car stocks equivalent to 6.1 weeks' supply, against 9.9 weeks' supply a year ago, based on current rate of sales.

The next two months will see the main activity of sales departments centered on moving used car stocks. Extraordinary pressure will be brought to bear on dealers backed up by factory assistance and national advertising. From December 15 through to January 15 Chevrolet is staging a countrywide advertising campaign appealing direct to used car buyers, with the slogan "The Choice Used Car Buying Season Has Changed." DeSoto has launched a campaign featuring "Winteready" used cars. Ford is expected to announce a campaign after the first of the year. Some companies are tying in promotional activity with popular safety campaigns. By emphasizing the desirability of trouble-free transportation through cold-weather months and the need for well-conditioned cars for winter driving, from the standpoint of safety, comfort, economy and convenience, motor companies and their dealers hope to give to used car sales a stimulus comparable with that which the glamor of new models provide for new car demand.

"I Bought a Car for Xmas"

"Why did I buy a car for Christmas delivery?" George Derry, who is president of The Philadelphia Coca-Cola Bottling Co., and a resident of suburban Philadelphia, repeated the question asked him by AUTOMOTIVE INDUSTRIES.

"Well, I have been an automobile owner for some years but Mrs. Derry neither drove a car nor did she want a chauffeur. It takes about 20 minutes to drive from our home to the center of the shopping district, while approximately one hour is required to reach the same destination by bus. My wife's silent wish that she had a car having recently at time become audible, and our 8-year-old son having vociferously championed his mother's cause (doubtless with ulterior motives) I finally suggested to him that we give his mother a car as a Christmas present. With a radiant countenance he gleefully accepted the suggestion but was very in-

sistent that delivery be accomplished on Christmas morning and with him the whole thing is a great secret. It goes without saying there are two anniversaries other than Christmas where a car would be acceptable as a gift and our purchase would not have been made at this time had not the 1936 model been presented to the public in advance of the time during which showings have been first made in previous years."

Fruehauf Fights NLRB's Order

(Continued from page 807)

Michigan Manufacturers Association asked permission to intervene to the extent of filing a brief.

Motion for dismissal of the complaint was made at the hearing by the defendant on grounds that the board lacked jurisdiction because the alleged unfair labor practices did not affect interstate commerce. The motion was overruled.

Dillon Hails Fruehauf Order

"The Fruehauf Trailer Co. decision of the N.L.R.B. spells the doom of a vicious and indefensible labor policy which has developed through the years within America's great automobile industry," F. J. Dillon, president of the International Union, United Automobile Workers of America, said when informed of the Board's order:

"This decision will be historic because it forms the basis upon which will be determined the future policy of the international union, within the automobile industry," Mr. Dillon said. "Employers will, of course, challenge the constitutionality of this law. This is to be expected, for it has unfortunately always been their policy with reference to labor legislation. The employers will finally be defeated in their efforts to evade and nullify this law. They will be defeated just as they were defeated when they defended the infamous blacklist, when they utilized the indefensible injunction process, as well as the more modern 'yellow dog' contract. The U.A.W.A. will prosecute the Fruehauf Trailer case to the highest court of the land and if the Supreme Court declares this law unconstitutional, we will immediately go to Congress and urge amendments to this law which will conform to the Court's decision and preserve labor's rights."

New Chevrolet Office

The Chevrolet Motor Company is establishing a zone office in the Mansion Building here under the management of E. W. Davidson, formerly of Atlanta.

Thermoid Co. of Trenton, N. J., announces the acquisition of the Tripleware Brake-lining Corp. (formerly Durwyllan Co.) The Tripleware factory and main offices are located at Patterson, N. J. Norman Heil, president of Tripleware, and William Heil, secretary and factory manager of the corporation, as well as junior executives, will affiliate with Thermoid.

Praise, Criticism for Safety Efforts

(Continued from page 805)

safety movement, nationally known safety experts, representatives of the press and leaders of industry.

Shortly after the conference got under way the delegates were formed into committees and into sub-committees to consider the many aspects of the safety problem. To the automotive industry one of the most important of these was the Committee on Cooperation with the Automotive Industry. A preliminary report was made in which the necessity for broad-gauged educational effort was stressed. This committee is headed by John L. Lovett, Detroit, general manager of the Michigan Manufacturers' Association. Three sub-committees were organized—automobile manufacturers, drivers and drive regulations and devices. On the first are Paul G. Hoffman, Studebaker president, chairman; Thomas P. Henry, American Automobile Association president, chairman, and C. C. Carlton, Motor Wheel Corp., chairman. Mr. Hoffman's canvass car makers to determine their views and attitude on safety plans and programs; Mr. Henry's committee will seek to develop an educational campaign to encourage safe driving and suggest safety regulations, while Mr. Carlton's group will investigate various devices used on modern automobiles to determine their values in accident prevention.

Opening the meeting, Secretary Roper, substituting for Senator Harry Moore, absent because of illness, said: "This is not a move by the federal government to assume national responsibility for accident prevention. Distinctly that responsibility belongs with individuals, states and local communities, and there it must remain.

"The public is beginning to realize the overwhelming nature of accidents. . . . However, it is the motor car accidents that occupy most of their attention, possibly because they are of a public nature and the newspapers feature them. . . . The group with the largest responsibility in this situation is the automotive industry. I am cognizant of the aid it has given safety movements in the past. . . . Among other things the interested public desires to know . . . are these:

"Why is it necessary to manufacture cars with speeds of from 80 to 100 miles an hour?

"What steps are being taken by dealers to insure the public against high-speed cars being sold to reckless, disabled or incompetent drivers?

"Have certain manufacturers, especially in the light car field, effected economies, particularly in bumpers, so as to make cars less safe?

"Why, with all the engineering skill that the industry possesses, has no greater progress been made in taking the dangerous glare out of headlights?

40 Years Ago

—with the ancestors of
AUTOMOTIVE INDUSTRIES

Ancestor of the Doughnut Tire

J. B. West, Rochester, N. Y., has given much attention to the motor vehicle for nearly 20 years. He has completed a one-seated vehicle which exhibits a number of highly novel features. The drive wheels are 30 in. in diameter, and are fitted with 6½ in. tires. No spokes are used, a web of steel plates being substituted. Each will carry a load of a ton.—*The Horseless Age*, December, 1895.

"What definite steps does the industry plan to take to help eliminate old and unsafe cars from the road?

"What is it going to do on its own initiative—and not through outside groups—to bring about uniform traffic legislation and law enforcement?

Committee Points

Compulsory automobile liability insurance does not promote safety; blame for unenforcement of traffic regulations belongs not on the desks of police court magistrates and justices-of-the-peace, but on the doorsteps of the legal profession, and the quickest and surest way to promote adoption of a uniform motor vehicle code among states is to make it a prerequisite to Federal-aid funds for road-building purposes.

These authoritative viewpoints developed at the Uniform Traffic Regulations Committee meeting in connection with the Roper accident prevention conference.

Francis J. DeCelles, insurance commissioner of Massachusetts, said: "Compulsory insurance may be a fine protection for the pedestrian, but it certainly has not promoted safety in Massachusetts. It has made everybody claim-conscious and when people are claim-conscious you can't get safety results."

Plan Grand Rapids Fisher Body Plant

(Continued from page 805)

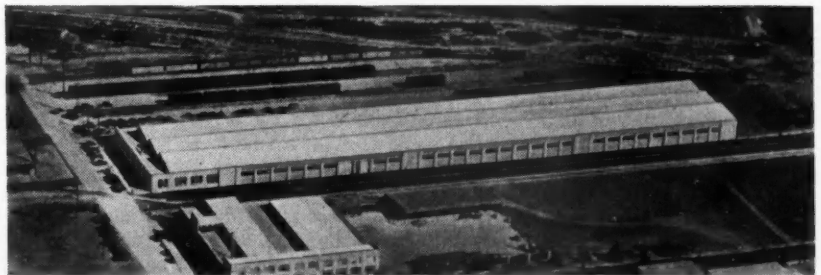
motor concern. It forms one of the major steps in the expansion program now being undertaken by the corporation's body-building organization. The plant, a modern, daylight structure, containing some 400,000 sq. ft. of floor space, will have a capacity of 2000 complete sets of stampings daily, and will serve as a source of supply for all assembly plants in the country.

"The plant will consist of two major departments," Mr. Fisher declares. "One is to be devoted to the production of large stamping dies and tools. The other will have facilities for fabricating a complete line of panels and other metal parts used in body building. The additional die shop capacity is needed immediately to augment the facilities of our present die shops. A further expansion of our stamping facilities, brought about by various conditions, also is necessary. Among other things the changes in modern design tending toward steel construction, of which the solid steel 'Turret Top' body is an outstanding example, coupled with greatly increased demand, have made this new plant imperative."

"The Grand Rapids unit will be completely equipped to produce all varieties of metal parts employed in body construction."

Construction work on an 80 acre tract purchased as a site for the plant will begin shortly after the first of the year, Mr. Fisher states. Operations will be started early in March when the first units of the structure are scheduled to open. By the time the remainder are completed in the summer, it is expected that the number of employees will have reached 1000. Eventual employment for from 1800 to 2000 workers, with an annual pay roll totalling more than \$2,500,000 is considered a certainty.

Del S. Harder, now attached to the staff of Thomas P. Archer, vice-president of Fisher Body in charge of operation, will be transferred to Grand Rapids as resident manager of the new plant.



The new Studebaker assembly plant in Los Angeles. One story high and covering 100,000 square feet, it is said to be one of the most modern assembly plants in the industry.



Stockton
Profile
Gage

C. N. Oldfield, superintendent of inspection, Buick Motor Co., demonstrating the use of the Stockton profile gage. This gage is made up of a large number of thin laminations which readily conform to any profile. The form is retained by clamping the gage and the outline can then be transferred to a die or pattern for the purpose of reproducing the desired form in production or experimentally

Car Steel Orders Prop Output Rate

*Detroit-Cleveland Areas
Operating Near Capacity
to Meet Specifications*

Specifications from motor car manufacturers and parts makers for January steel deliveries are coming through in such volume that finishing mills need not slacken their operating pace during the year's final period. Ingot and semi-finished steel output is traditionally held down at this time, but sheet and strip mills, notably those in the Detroit and Cleveland areas, continue to work at close to capacity.

Announcement that the third largest of the "independent" steel producers will enter the flat steel field and plans construction of a \$25,000,000 strip and sheet mill may be taken as further indication that the long range outlook in the flat steel market is decidedly in consumers' favor. A recent announcement of the American Iron and Steel Institute points out that from 1923 to 1934 sheet steel prices declined 46.5 per cent. At no time within that 12-year period has the margin between rolling mill capacity and consumption been so impressive as it is today and with the further additions scheduled for 1936 and 1937, the spread between what tonnage the automatic, continuous mills can pour forth and the demand is likely to be much more of a factor in the determining of prices than it has been so far.

Leadership in the steel industry is addressing itself to the difficult task of keeping gradual price adjustments within limits that will permit of orderly amortization of the heavy invest-

ment burden that the continuous mill has forced upon the rolling mills. While a good deal of the old-time equipment has been scrapped, some of it still finds profitable employment in the filling of odds and ends of orders, the quantities entailed in which do not permit of economical rolling in continuous mills.

Pig Iron—Shipments to Middle West automotive foundries are running fairly heavy for this time of the year. It is expected that a good deal of iron will be shipped from Lake Furnaces by rail during the first quarter, producers having been unable to discharge all obligations on their books in time for water transportation. Blast furnace stock reserves are being replenished from current furnace output. Prices are unchanged.

Aluminum—Demand for both primary and secondary metal and alloys from automotive consumers is well maintained. Prices are on an even keel all around and unchanged.

Copper—While domestic demand has improved, the influence of sentiment in world markets tends to put a brake on bullish ideas. A Rhodesian producer is reported to have expressed himself to the effect that prevailing price levels yielded a satisfactory profit margin and should not be jeopardized by unjustified advances. Electrolytic continues to be quoted at 9½ cents, delivered Connecticut.

Tin—Spot Straits tin was quoted ¼ cent higher at the beginning of the week, 49.85 cents being asked, with business light. Second quarter futures are quoted at 47½ @ 47½ cents.

Lead—Somewhat more quiet, but steady and unchanged.

Zinc—Firm and unchanged.

Designing Engineers Seek Bargaining Agency Status

The Society of Designing Engineers petitioned the Regional Labor Board in Detroit for certification as exclusive bargaining agency for members of its craft in the Chrysler Corp. plants, the society claiming to represent approximately 80 per cent of all eligible to membership. The board held a hearing last Monday.

Owner of Oldest Chevrolet To Receive Millionth Car

Chevrolet's one millionth car of 1935 production—a 1936 standard coach—is to be presented to the owner of the oldest Chevrolet licensed and in regular use in the United States. The one millionth Chevrolet built within the current year came off the assembly line at Flint, Mich., on Dec. 12, just eight days after Chevrolet produced its 11 millionth car since the beginning of the company.

Presentation of the millionth car of the year will be made to the owner whose Chevrolet is discovered, between Dec. 16 and midnight Jan. 15, to be the oldest model licensed and in regular service. The old-timer Chevrolet must have been regularly licensed for operation during the current year, possessing its own 1935 license tags issued before Dec. 1. It must, also, have been licensed as a passenger car, and be equipped with a complete passenger car body. It must bear the original engine and chassis numbers, legible and unaltered.

Historic Rubber Mold Found at Goodrich Co.

What is believed to be the first mold ever made for the manufacture of a rubber product has just been found in the archives of the B. F. Goodrich Co., and will be placed on exhibit in the company's offices. This No. 1 mold, developed in 1879, was used for manufacturing an article then known as a "frog pad" which was placed between the horseshoe and frog of the horse's hoof. For many years the product was widely sold throughout the country, and was one of the main products of the Goodrich Co., long before the development of fire hose, mechanical rubber goods and later automobile tires.

AFA Plans Exposition In Detroit Next May

A foundry and allied industries exposition has been planned by the A. F. A., to be held in Detroit at the same time as the 40th annual convention of the association, May 4 to 9, 1936. It is expected that the exposition will provide one of the largest displays of equipment, materials and supplies for the foundry industry ever held in the history of the industry. Convention Hall, near the hotel district, will house the exposition.

A tentative schedule of events calls for registration, plant visits and committee meetings on Monday, May 4; formal opening of the exposition on Tuesday morning, May 5.

Willys Makes Test Run

The same 1936 Willys 77 stock car that recently obtained a sustained reliability of over 70 m.p.h. average in a 24-hr. run has just completed another

24-hr. run in which it averaged more than 36 miles per gallon at an average speed of 45 m.p.h. in a run of 1080.48 miles, R. J. Archer, sales manager of Willys-Overland, announced

The first test resulted in 1683.3 miles, or an average of 70.13 m.p.h. After finishing the 24 hr., another lap was made at 79 m.p.h.

Recommend Cease-Desist Order Against Goodyear

Recommendation that the Federal Trade Commission issue a "cease and desist" order against the Goodyear Tire & Rubber Co. for alleged violation of the Clayton Act through price discrimination was made Monday in a brief filed with the Commission by three members of its legal staff, W. T. Kelley, Everett F. Haycraft and A. W. Debirny. The case centers around sales of tires to Sears, Roebuck & Co.

Financial Notes

Special meeting of stockholders of Allen Industries, Inc., manufacturers of cotton and felt materials for the automobile industry, has been called for Dec. 3 to vote on recapitalization proposal which will result in retirement of preferred stock. The plan, which has been approved by directors, also calls for payment in full of all of its long-term and funded indebtedness, a split-up of common stock on a 3 to 1 basis and issuance of an additional 39,500 shares of common after giving effect to the splitup.

The L. S. Starrett Company, Athol, Mass., recently acquired the business of the Henry A. Lowe Co. of Cleveland, Ohio, manufacturers of "Last Word" indicators. All of the equipment for the manufacture of these instruments has been moved to the Starrett works in Athol.

Net profits after all charges, depreciation and taxes of \$5,649,145 have been reported by Firestone Tire & Rubber Co. for year ended October 31. This compares with profits of \$4,154,655 in year before. Net sales gained 22 per cent and were \$121,670,572 compared with \$99,130,243.

Electric Auto-Lite Co., has declared the regular quarterly dividends of \$1.75 on preferred stock and 30 cents on common shares payable Jan. 2 to holders of record Dec. 26, it was announced by Royce G. Martin, president.

Directors of the City Auto Stamping Co. have declared a quarterly dividend of 15 cents payable Dec. 20 to holders of record Dec. 10. There are 375,000 shares of no par common stock outstanding. Unofficially, it is reported company earnings will run about \$1.25 a share for 1935.

Thompson Products - Toledo Steel Affiliate; Plan New Stock Issue

Thompson Products Co. of Cleveland this week announced affiliation with Toledo Steel Products Co. of Toledo.

Thompson officers said the affiliation of the two companies is not a sale or absorption of the Toledo plant, which manufactures valves, bolts and pumps and pump parts. They insisted the move is not an absorption of the Toledo plant, which will continue to operate as an entity and under its own management. The Cleveland valve and pin making concern is acquiring an interest in the Toledo company. This was made certain by announcement of a refinancing program by Thompson, a part of the proceeds of which will go for the purchase of an interest in the Toledo property. The Toledo Steel Products Co. has been operating under control of an investment trust.

The program calls for issuing 10,000 shares of prior preference stock, increase in the common no-par shares from 300,000 to 500,000 shares and calling for the present preferred issue on 30 days' notice. Proceeds of the refinancing plan after taking out funds for the interest in Toledo Steel Products will be used to eliminate the present 7 per cent preferred stock, wipe out bank debt and provide additional working capital, thus opening the way for resumption of common stock dividends.

The new prior preference stock will be convertible into common at \$100 a share for the preference and not less than \$30 a share for the common. It will be redeemable at \$105 a share, plus accrued dividends and will have one vote per share.

Thompson stockholders will vote on the proposal Jan. 15. Thompson officials did not state the amount to be put into Toledo Steel Products securities.

Nov. Rim Inspections Double Total Year Ago

November rim inspections more than doubled the total for the same month one year ago, according to statistics compiled by the Tire and Rim Association, Inc. During last month 1,804,

473 rims were inspected against 577,713 for November, 1934. The 11 months' total for this year showed an increase of about 5,000,000 over the corresponding months of last year, 16,752,420 for this year, against 11,135,878 for the same months last year.

Nov. Crude Rubber Import Up 20.4% Over Year Ago

Consumption of crude rubber by manufacturers in the United States for November is estimated to be 42,778 long tons, which compares with 42,436 long tons for October, 1935. November consumption shows an increase of approximately 1 per cent above October this year and 23.1 per cent above November a year ago, according to the Rubber Manufacturers Association. Consumption for November, 1934, was reported to be 34,748 (revised) long tons.

This organization reports imports of crude rubber for November to be 28,826 long tons, a decrease of 16.1 per cent below October figure of 34,356 long tons, and 20.4 per cent under 36,233 long tons imported in November, 1934. The association estimates total domestic stocks of crude rubber on hand Nov. 30 at 303,162 long tons which compares with Oct. 31 stocks of 317,850 long tons and 362,826 long tons on hand Nov. 30, 1934.

Jones-Laughlin Co. Plans \$40,000,000 Expansion

A \$40,000,000 plan for new mills and other improvements has been announced by the Jones and Laughlin Steel Corp. It will include a \$25,000,000 strip and sheet mill to be erected at the Pittsburgh works, marking the entry of the company into this important market.

Stockholders are being asked to approve the creation of a \$100,000,000 first mortgage on the properties of the corporation and certain of its subsidiaries in order to furnish funds for the proposed expansion as well as for possible future requirements. Of this, it is proposed to sell bonds to the amount of \$40,000,000 at the present time. The remainder would be available for issuance at later dates if required.

Otis NAM Director

Joseph E. Otis, Jr., president of Stewart-Warner, Inc., has been elected a director of the National Association of Manufacturers.

CALENDAR OF COMING EVENTS

SHOWS

National Motor Boat Show, New York, Jan. 17-25
Amsterdam, Netherlands, Automobile ShowJan. 31-Feb. 9, 1936

CONVENTIONS AND MEETINGS

S.A.E. Annual Meeting, Detroit, Jan. 13-17, 1936

American Roadbuilders Assoc., ClevelandJan. 20-24

Assn. Highway Officials of No. Atlantic States, Atlantic CityFeb. 12-14

American Society for Testing Materials, Regional Meeting, Pittsburgh, March 4

U. S. Chamber of Commerce, Annual Meeting, WashingtonApril 27-30

The Horizons of Business

Illiteracy and Dishonesty

IT is with some distaste that responsible business leaders turn their attention from the booming indicia of recovery to the probable conduct of the Congress which will assemble after the first of the year. We omit from this group of business leaders the congenital alarmists who see in every Congress a threat to security. Nor does this group include any part of the partisan opposition which claims that sin and error must always issue from those who wear the wrong political label.

The Game of Politics

The group we speak of consists of larger-minded leaders who rise above the prejudice of interest. They are men who do not expect their representatives in Congress to wear halos and to sport wings. They make ample allowances for those conditions of political success which make it necessary for a statesman to compromise with principle. They expect the Honorable William Ballot to kiss babies, to vote appropriations which are not strictly necessary, to barter his vote for demonstrable favors to his own constituents, to make unnecessary speeches, to spank able citizens with bombast and burlesque vigor for the edification of voters.

This is the game of politics in a democracy and the wise business man tolerates it because he knows that it cannot be avoided. Even where limitations are natural and not assumed the only rebuke which

a Congressman gets is a little badgering by the press and his opponents.

A Pilgrimage to Rome

However, a stage is reached where the ignorance of representatives may result in grave mischief. The attitude of the present Congress during its last session is still fresh. It professed a disconcerting hostility to wealth and business organization, particularly where the latter ran to size, and a desire to penalize success.

Realizing how seriously such an attitude jeopardized the general welfare, a group of business men from New York made the trip to Washington in the late spring. They did not go to ask reduction in taxes or the passage of special legislation. Not a line appeared in the press. These men were going to the capital as representatives at large—self-appointed to be sure—of the country's business. They invited a similarly representative group of Congressmen and Senators to dinner. As the cigars were being passed, the spokesman of the business delegation rose and revealed its purpose. He spoke bluntly and directly without the persiflage of diplomacy.

The Question

Said he in effect: "You men are acting as though the business leaders of the country were public enemies. You are debating legislation which assumes that all business is

reprehensible. You are trying to stamp us as racketeers. We know that this is not the case and we know that you know it. We will not insult your intelligence and waste our time by arguing the general integrity and public spirit of American business men. You know that we are not economic gangsters. We know that you are not social saints. Under the skin we are all citizens with the same virtues, the same faults and the same rights. What's up? What's the game?"

A Frank Reply

Since the speeches were not to be printed and no stories were to be told out of school, the men who make our laws were equally direct and frank in their replies. We cannot here consider all the points made by the defense. Of particular interest to automobile distributors is the statement of a Congressman who represents a populous district in New York state.

In substance: "There are 12 million unemployed. People are starv-

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Despite unfavorable weather in some sections of the country, general business continued its upward movement last week. Retail merchants reported a heavy volume of sales, and Christmas buying was progressing satisfactorily. The break in silver prices had an unsettling influence on commodity markets.

Freight Loadings Up

Railway freight loadings during the week ended December 7 totaled 637,133 cars, which marks an increase of 66,706 cars above those during the preceding week, a rise of 85,648 cars above those a year ago, and an increase of 95,141 cars above those two years ago.

Food Prices Rising

According to the Bureau of Labor Statistics, the index of retail food prices during

By Joseph Stagg Lawrence

ing while the surpluses which might feed them rot, etc., etc. The time has come when Congress must consider the interests of those who produce the country's wealth. These are the men and women who labor on the farms and in the factories away from the big cities. The cities are filled with middlemen who do nothing and make 20 to 100 per cent profit. We are going to correct this. You don't like it. That's natural. But remember this. We are elected by the men and women who produce wealth and not by the chiselers who stand between producers and consumers and make all the money."

The Priests of Power

It is difficult to alter such a conviction by reasoning. The men best able to do so almost invariably occupy positions of great responsibility in business which absorb their entire energies. The opposition recruits the voluble, soft-boiled theorists who have never experienced the strain of meeting a payroll. Working with them are men who have failed in private life,

who resent their failure and propose to salve their sense of inferiority by persecuting the successful.

Among those who have been most insistent in pressing the death sentence clause in the Utility Act is a brilliant young attorney of humble origin who secured his education against great odds. He was off to a promising start in Wall Street in the twenties. Playing the market on thin margins, which so many of his exalted colleagues now piously deplore, he accumulated a fortune on paper. When the crash occurred he had an equity of approximately a quarter of a million dollars. For a youngster who had started penniless and had barely turned thirty this might be considered rather handsome. When the collapse came he was far out on the limb avidly intent upon multiplying what was already a substantial profit. Avarice is the word. Before the jagged line of stock prices had covered many periods he was left with nothing but a good education, a fine mind and an implacable hatred of Wall Street. Into his hands and

others like him was placed the delicate task of reforming big business.

Hell Hath No Fury

Such men are vindictive and dishonest. They are dangerous, since they combine knowledge with a lack of scruple and a burning desire to atone for their failure by making it impossible for others to retain the fruits of success. They are aided by eccentric professors and economically illiterate politicians—men with little honor in their own professions. These do not speak for the great mass of earnest scholars who carry on the work of research and teaching in our universities at modest pay. It is often difficult to determine whether these men are innocent fools or vicious charlatans.

These two types, the astute, disappointed and vengeful reformer and the mistaken, impractical scholar, combine to provide the politician with a philosophy and a patter which results in the astounding argument of the New York representative that a middleman, *e. g.*, a distributor or a dealer, is a parasite who must be curbed by legislation. Because such an attitude is the product of economic illiteracy and intellectual dishonesty does not make it any less subversive. The time has come when it is again necessary for those who assume the risks and render the services of distribution to justify their business existence. It is a challenge which the automobile industry and particularly the dealers cannot ignore.

the two weeks ended November 19 stood at 81.5, based on the 1923-25 average as 100, as compared with 80.4 a fortnight earlier and 75.0 a year ago. The increase during the two weeks under review is chiefly due to advances in the prices of dairy products, fruits, and vegetables.

Retail Sales Better

The value of department store sales during November increased by more than the usual seasonal amount, according to the Board of Governors of the Federal Reserve System. The adjusted index stood at 80, based on the 1923-25 average as 100, as against 77 in October and 81 in September. November sales were valued at 10 per cent above those in the corresponding period last year.

Construction Slower

Construction contracts awarded in 37 eastern states during November totaled \$188,115,000, as compared with \$200,595,700 during October. The current figure, however, is about 68 per cent above that for the corresponding period last year. Residential construction contracts awarded in

November were almost double the amount of those a year ago, according to the F. W. Dodge Corporation.

Oil Production Steady

Average daily crude oil production for the week ended December 7 amounted to 2,785,300 barrels, as against 2,820,450 barrels for the preceding week and 2,386,850 barrels for a year ago.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended December 11 showed an increase of \$1,000,000 in holdings of discounted bills. Holdings of bills bought in the open market and of government securities remained unchanged. Monetary gold stocks increased \$59,000,000, and money in circulation declined \$2,000,000.

Fisher's Index

Professor Fisher's index of wholesale commodity prices during the week ended December 14 stood at 84.0, as against 84.6 the week before and 84.5 two weeks before.

Finding Out What the Consumer

INTO the drizzling rain of Lexington Avenue, during the last automobile show in New York, a young man stepped from one of the doors of the Grand Central Palace. He was neatly but not expensively dressed in a Chesterfield overcoat and derby. His none too costly tie could be seen between the lapels of his Chesterfield by the attractive girl who accosted him.

"Excuse me," she said; "have you just seen the automobile show?"

"Sure thing."

"Thank you. We're conducting a survey of show visitors' reactions. Would you mind telling me what you think is the best-looking car in the show?"

"Glad to," said the young man, and the interview was on. Smilingly he told his pretty questioner what car he thought the best looking, which he considered the best value, what he thought of various automobile features, and so

on for ten minutes of tactful quizzing. The girl, meanwhile, noted his responses rapidly on a printed form.

When, in answer to the question: "What car do you now own?" he said: "A Packard," and when a little later he confided that his next car purchase would probably be a Cord, the girl's eyes narrowed a bit.

They followed him closely when, with a democratic smile, he moved off toward Forty-Sixth Street. Then the girl stepped out behind him. A few minutes later, just around the corner, she saw the young man climb into, not a Packard, but a Model "A" Ford which was a bit the worse for the years.

The girl sighed, and the torn remnants of a questionnaire fluttered into a sidewalk refuse can.

We who have the job of feeling the fickle pulse of the car-buying public through consumer surveys at show

time loathe this young man and all his kind. Fortunately we have found that most of the men and women whom our interviewers question do not yield to exhibitionist impulses to make themselves seem more wealthy than they are. But there are always enough people who cannot refrain from playing up to an interviewer of the opposite sex, to make necessary eternal watchfulness and much checking.

And, in spite of everything, there are always in every show survey report indications that a few of the interviews aren't all they should be. It just can't be helped.

In the case just described, however,

FOR both portions of its famous phrase, "an eye to the future—an ear to the ground," General Motors leans heavily on its Customer Research Division. Much has been written about the success of General Motors in the field of fact finding, little about what other automobile manufacturers have been doing in the same field.

Most customer research for other automobile manufacturers has been done by independent organizations. The "button-holing business," as it is sometimes called, has grown greatly during the last two years and has become an important factor in the planning of automobile companies for future sales and public acceptance.

In this article, AUTOMOTIVE INDUSTRIES presents what is believed to be the first complete story of the facts behind fact finding, as they affect the automobile industry. The author, Thomas G. MacGowan,⁽¹⁾ heads an organization which has conducted at the automobile shows customer surveys for a number of automobile manufacturers.

⁽¹⁾ President, Facts, Inc., New York.



Thinks About the New Cars

the interviewer—seasoned on several such surveys—knew that \$35 overcoats and 60-cent ties don't gee with automobiles that cost more than \$2,000. And she acted accordingly.

Every year many interviews are similarly discarded before the two thousand or so responses necessary for such a survey have been gathered.

It's a problem—a problem that has disturbed market researchers in the automobile field ever since that much-publicized instance long ago when twice as many people in a certain town claimed to own Rolls-Royces as there were Rolls-Royces registered. And it is only one of many hurdles that must be

surmounted before a research organization can turn out for manufacturers a survey that will reliably indicate where the new models so painstakingly and hopefully introduced at show time are going, and why.

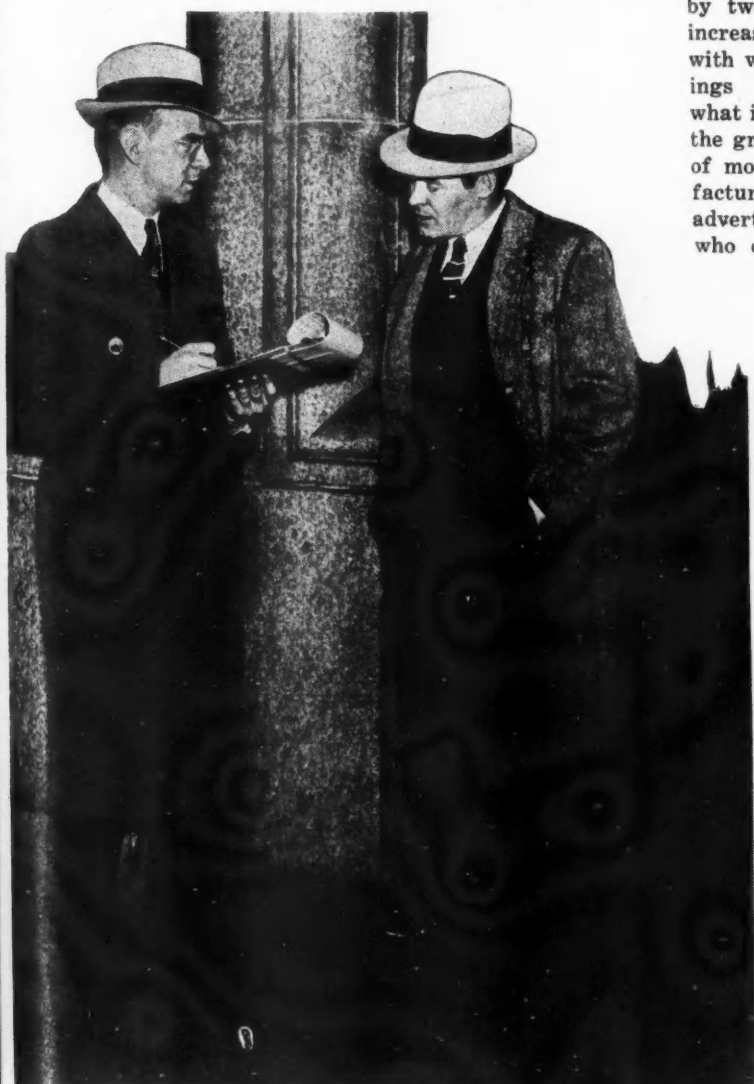
The comparative success with which the problems are being met is attested by two things: the increasing accuracy with which the findings foreshadow what is to come, and the growing number of motor car manufacturers and their advertising agencies who carry on such

undertakings, either cooperatively or independently. Within my own three years' experience in conducting automobile show surveys I have observed real gains in technique and manufacturers' support.

The first automobile show survey several years ago was comparatively crude, as were, indeed, all efforts at studying consumers' likes and dislikes in that not-too-distant day when all sales research was in its swaddling clothes. Even today techniques and results are far from perfect, and we have still far to go. Many mistakes have been made and no doubt there will be many more. But the idea back of show surveys on automobiles seems to have proved itself; at least with some of the most important factors in the industry. The same thing is increasingly true of certain other kinds of field studies to get the automobile consumer's viewpoint.

This November four independent market research organizations conducted New York show surveys for groups of clients, as against three in January and two the year before, and in addition there were investigations by the advertising agencies of three manufacturers, whereas only two agencies' studies were made at the January show.

The research organizations all followed much the same method. Each had a corps of interviewers, with a supervisor, posted outside the Grand Central Palace to question show visitors as they came out. All the questionnaires were framed primarily to find out how the cars stacked up on appearance, value and mechanical features with the people who had seen them, and what cars these people would probably buy. One organization extracted from each "responder" a reason why for every answer, and tried to find out, not only the "best-looking car," the "best value car," and so forth, but also the "worst-



looking car," and the car giving the poorest value.

One group gave thought to the absent Ford products by segregating for special study the responses of people who said they had also seen one of the two special Ford exhibits.

Some of the questionnaires went into the matter of when the new car, if any, would be bought; others let this matter slide and merely asked, "If you buy a car, what one will it be?" One wanted to know: "What tires do you prefer on your new car?" Another: "What magazines do you read?"

Questionnaires Average Six Questions

The average questionnaire had six questions. One, which went at some length into the special features of the various cars and into such interesting but relatively remote topics as Diesel engines and rear positioning of power plants was nearly twice as long.

One enterprising advertising agency had a squad of eighteen expert young women stenographers planted inside the show, at a like number of exhibits, to note verbatim the conversation of the visitors with each other and with salesmen. This excellent and novel idea was employed in a slightly different form by another agency on a smaller scale.

Some manufacturers, as heretofore, entirely passed up any sort of organized study of show reactions, and relied on informal reports from organization members who circulated in the show. Although this tendency is on the wane, nearly half the manufacturers failed to utilize any form of regular consumer study at the show.

In addition, an ever-growing list of manufacturers of automobile bodies, parts and accessories, as well as those who supply only the raw materials which are used by the automobile manufacturer, are purchasing partial reports of cooperative surveys, covering the questions in which they are interested.

Outside the Grand Central Palace the interviewers had their troubles. As usual, there were attempts by men to arrange meetings with girl interviewers. And as always, nearly half of all those accosted declined to be interviewed. Our own staff of eight, it was estimated, approached more than 5000 individuals in the six days on which interviewing was in progress.

Police activities were another thing to think about. Sometimes, in previous years, the work has been halted when police ordered all interviewers away from the vicinity of the show, on the ground that they were congesting traffic. In such cases, the only recourse has been

to finish the survey at other metropolitan shows. Offsetting these difficulties is the fact that most persons who consent to be interviewed are ordinarily quite willing to give the information requested. Indeed, they frequently create a problem for the interviewer by excessive anxiety over the correctness of their answers, hesitating so long over their replies that the interview consumes too much time.

The interviewees vouchsafe many interesting comments. Men, as always, talk of mechanical features, power and economy; women, of comfort and beauty.

Despite this wealth of comment it is true that automobile show surveys provide essentially a "flash" reaction. Certainly this type of questioning under show conditions does not bring out much fundamental information as to what car buyers really want and to what really actuates their buying.

New York show surveys are intended by most users of them, I believe, chiefly to get the feel of the public pulse at the curtain-raising event of the motor year, and not for more basic purposes. The auto show is to the industry what the "first night" is to the stage. But with these differences: Each manufacturer's "play," so costly to produce, must run for months, for better or for worse. He cannot close it overnight if the reception is bad. And there is no group of professional critics to cast its oracular votes for success or failure.

A question which we are often asked is: How accurate are these surveys in indicating how large a sale the various makes of automobiles will enjoy? Frankly, show surveys obviously cannot reflect all the "variables" that get in their work before the cash registers have ended their months of tinkling.

All manufacturers' products are displayed on a fairly equal footing at the show, whereas advertising, dealer organization and activity and other features of a like nature—not to mention how the new cars stand up in service—all tend subsequently to increase the chances of some and lessen those of others.

Even so, all modern show surveys are, within reasonable limits, accurate. Our show survey of last January, for example, naturally showed the tremendous year in store for Ford. The nine-month record gives the Ford 31.8 per cent of all sales, whereas 29.6 per cent of the survey responders indicated an intention to buy that make. The great increases for Oldsmobile, Pontiac and Dodge were similarly shown. In fact, the survey and sales percentages of this and other surveys frequently tally within 1 per cent for more than half the cars studied. In other cases there have been pronounced inequalities in in-

fluences since the show, and less specific indications have been given.

All such surveys, so far as I know, have been successful in indicating at once what cars have *not* impressed the buyers favorably and which would fail, as well as in showing the cars due for sales booms.

Is a manufacturer well-advised in subscribing cooperatively to one of the various surveys available to him, rather than in having the research organization conduct a special survey for him alone? I feel that general questions from which statistics on many cars are to be developed may be handled as well and much more cheaply in cooperative studies, and special questions may usually be included on such surveys, the results going only to the manufacturers paying for them. But for going in detail into the car maker's problems, the custom-made survey is probably better in some cases than the ready-made study tailored to fit by adding special questions. Special surveys are much more expensive, however, for when the number of interviews has been cut down to save money, the results have been misleading.

In the field of automotive research apart from show surveys, indeed, no cooperative survey has ever been carried on, but many studies for individual manufacturers have been conducted and more are being made continually.

Several manufacturers are still conservative on this type of experimentation, but their attitude is less marked, even so, than was that of a certain sales manager several years ago who is reported to have said: "Advertising agencies are a necessary annoyance in this business; the difference between them and research organizations is that research organizations aren't necessary."

Awakens to Opportunity

There is no doubt that until recently the motor industry as a whole has, with certain notable exceptions, lagged behind industry in general in the use of consumer studies. The change which this situation is undergoing is probably a natural development in view of the peculiar circumstances of the automobile business.

Through its necessity for continually introducing what are in effect new products, the industry's success depends on correctly gaging public opinion in advance much more than is the case in most other lines. Furthermore, a mistake in estimating acceptance of his new offering is more costly.

The industry's problem is in a sense similar to that of the women's wear business, where styles also change rapidly from year to year and greatly af-

WHAT show surveys do is to amplify for motor manufacturers' ears the voices of Mr. and Mrs. John Public, themselves, who are the only arbiters. Here is how a manufacturer, in theory at least, profits from the average show survey:

1. He learns whether he has backed a winner, and how his competitors have fared; and he gets his first reliable information as to how many cars he will probably be able to sell of the new line;

2. He learns whether or not there must be changes in important particulars in his models;

3. If the manufacturer has scored a hit, he gets the information to justify opening the production throttle for full steam ahead;

4. If he discovers, for instance, that his car has a bad front-end, he has his cue to shape his advertising and sales campaign accordingly—see that pictures in advertisements do not emphasize the feature to his disadvantage, etc.;

5. He receives valuable information as to just why the public does or does not like individual features of his and competitive products;

6. Of extreme importance, by comparing the current survey with previous ones he can observe evidences of trends of public approval or disapproval as to major developments and innovations.

From these same data parts manufacturers similarly gage reactions to their products and chart production and promotion courses.

fect sales, but with how great a disparity in the risk involved! A manufacturer of dresses can change his product or bring out a new one with comparatively little cash outlay. Not so the automobile manufacturer who has had the ill-luck to bring out a line of cars which the public do not like.

To protect themselves from the vagaries of human caprice, certain manufacturers have, therefore, sought to ask the public, in effect: "What kind of a car do you want me to build for you?" and other related questions. The approach has, frankly, been tentative, and many ideas, some good and some bad, have been tried.

Several research organizations and advertising agencies have developed surveys by which consumers and dealers have been questioned by mail, by telephone and in person. In my own beginning in the work five years ago many mistakes were made; recently the efforts have begun to be more valuable.

Three years ago one progressive manufacturer launched a series of surveys which took a variety of forms. The effort was to find out:

1. What the buyers of this car and competitive makes did and did not like about their purchases;
2. How well satisfied they were with regard to many questions of appearance, mechanical design, equipment and performance;

3. Their ideas on prices and value in relation to size, power, etc.;

4. What suggestions they had for improvement of automobiles and of this make especially;

5. How they reacted to various ideas for major advances in construction;

6. What they wanted in the way of dealer service and how well they were satisfied with what they were getting in this regard.

Initial efforts had some practical success and the last two years have shown a steady improvement in this manufacturer's ability to produce automobiles of which the car-buying public approved. This line in current show surveys has jumped into the first half dozen on the matter of appearance alone, from a much lower position in the last show studies. The sales story has yet to be written.

Another manufacturer, whose success in producing beautiful and large-selling automobiles has been marked, has repeatedly gone to the public for information as to the acceptability of proposed changes. A third has made a great point of continually testing and checking consumer and dealer reactions to present and proposed designs. Others have carried on surveys of different types.

By contrast consider the manufacturers who have made no such attempt to reduce the element of chance from their

operations. Some through inspired designing and shrewd merchandising sense have been successful much of the time. Others have for years brought out without consumer investigations cars which have flopped because their appearance, structure and mechanical features totally failed to hit the mark.

There are a number of new and interesting ideas in automobile research which can be attempted, and which would seem to offer excellent possibilities if worked out with care and over a long enough period. As one example, if car buyers were to be shown pictures or actual small models of contemplated designs for new cars or parts of new cars at the same time that they are shown pictures or models of present cars, it might be possible to gage with considerable exactness relative acceptability of the various designs, with ensuing improvements in survey ratings and sales.

There is probably some room also for improvement in motor manufacturers' methods of studying what actuates the buyer in his choice of one car over another—what direction, in other words, the advertising and promotion of a new car should follow. It is conceivable that a certain feature of debatable sales value but undoubted intrinsic merit should be included because a certain proportion of the buyers will want it, but not stressed in advertising because most buyers do not react strongly to it as a sales point.

The merits of the possible appeals—beauty, size, value, quality of the ride, economy, exclusiveness, prestige and various special features may to a certain extent be predetermined, first, through general studies of the consumer's buying psychology, and second, through specific tests in terms of a particular campaign and a particular automobile.

Some data of these types can be gathered at shows; most must come from "the field," with much patient experimentation on a reasonably large scale and with as close cooperation as possible between a single representative of the manufacturer and one organization carrying on the work.

At all events, automobile show surveys, providing a quick check on public reactions to *what has been done*, have definitely clicked with most of the industry and the trend to their acceptance still goes on. It seems on the cards that this tendency will be matched by increasing use by motor manufacturers of the more fundamental surveys which seek to show *what should be done*. More and more, manufacturers feel that the goal—the elimination from their experience of costly failures and the development, instead, of cars which exactly conform to the public taste.

Bonded Rubber-to-Metal

Present Interesting

By JOSEPH GESCHELIN

Detroit Technical Editor, AUTOMOTIVE INDUSTRIES



Spraying metal with cement to give good adhesion

Buffing flash from metal-to-rubber parts.



ONE of the most important speciality activities born of automotive development is the production of bonded rubber-to-metal mechanical parts of great variety. Its present commercial standing is due largely to the close cooperation of manufacturers of rubber products with automotive research organizations.

It has been our privilege to see at first hand the operations in the motor products division of one of the great rubber goods fabricators — United States Rubber Products, Inc., of Detroit. And through the courtesy of this organization we are permitted to give here a sketchy review of their manufacturing facilities as well as some comment on the technical problems involved.

We might start by noting that this company produces a variety of automotive parts fabricated of rubber and rubber-and-metal including: motor mountings, rubber grommets in great variety, hard rubber steering wheels, body mountings, and the like.

The group of photographs shown here will give a quick picture of some of the important steps in the process and also give some idea of the type of manufacturing equipment used in an operation of this kind.

Production of rubber-to-metal spe-

cialties has become a highly technical process involving precise control in the selection of raw materials, control of every step of manufacture, and unusual precautions to assure the elimination of dirt and other foreign materials incidental to the operation of any production unit. It takes all this together with the knowledge of rubber technology to produce parts that will meet the exacting mechanical specifications demanded by the users.

Briefly, the manufacture of automotive rubber-to-metal parts involves the following steps:

1. Production of raw or unvulcanized rubber compound.
2. Brass plating of the metal form.
3. Assembly of unvulcanized rubber molding with the metal part.
4. Vulcanizing operation.
5. Trimming of flash and finishing operations.
6. Final testing and inspection.

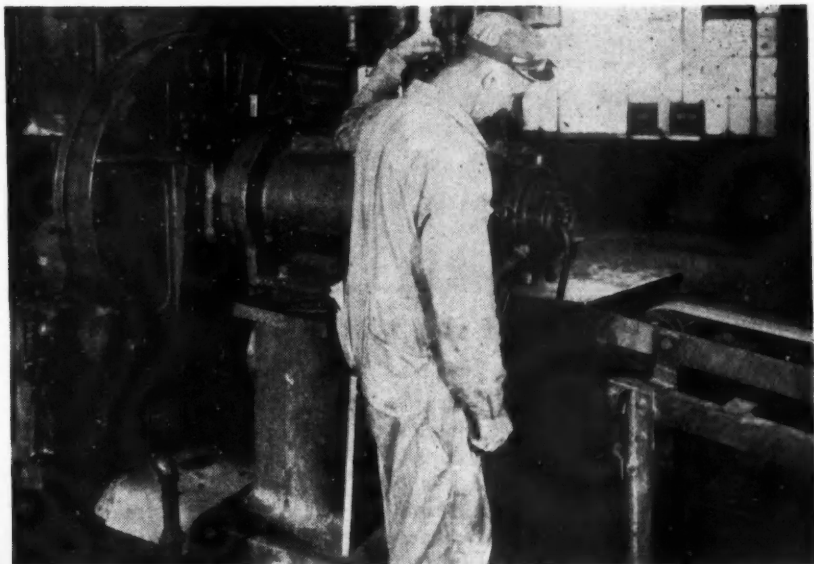
For the automotive parts considered here, the rubber stock has to be compounded not only to obtain the required physical properties but also to get the desired degree of adherence to the plated metal. The nature of the compound yielding these properties is the product of a great deal of painstaking research. The rubber stock is generally prepared in the form of rough thick slabs and to facilitate the future molding operations, it is formed into approximately the shape of the final cured product. Depending upon the nature of the final product, the rough stock is made up in calendered

Parts for Automobiles

Production Features

sheets, tubed in round or irregular shapes either solid or with holes running through. Most of the parts are tubed in long lengths which are then cut into short sections with a wet saw.

Unquestionably, to those unfamiliar with these techniques it will be of great interest to learn that even the chemical properties of the metal used for rubber-to-metal parts are of greatest importance. The metal is generally 1010 S.A.E. hot-rolled steel, fully pickled and free from rust, grease, oil,



(Above) Tubing raw stock for preparation for molding



(Left) Assembling motor mountings preparatory to molding

unvarying uniformity. After plating, the surfaces must be washed free from contaminating salts, and guarded against moisture, grease and other forms of contamination. Automatic plating equipment has been found desirable in order to achieve the required control of plating solutions.

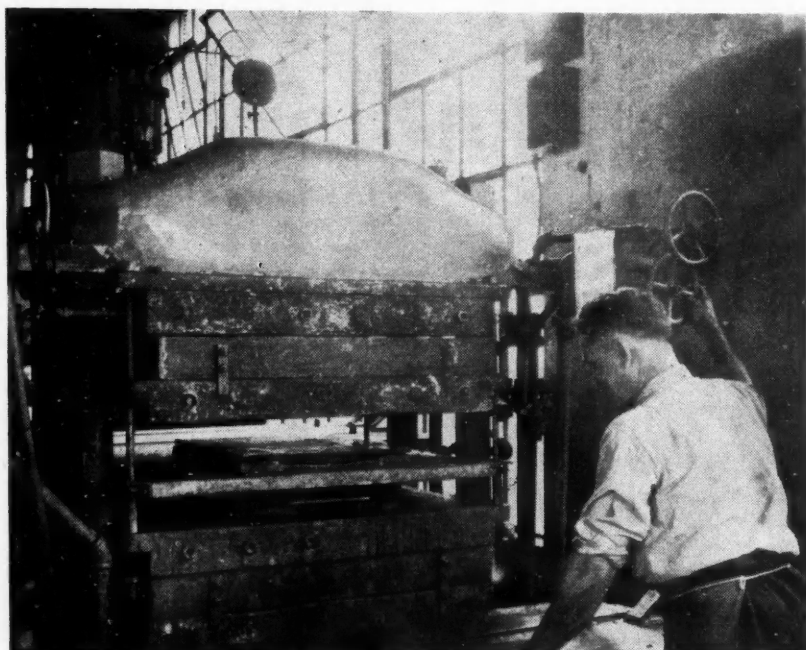
Other precautions are necessary. For

(Below) Brass plating metal stampings



or other foreign coatings. Stampings supplied to the rubber fabricator must be so made as to be free from shiny surfaces. The edges of the stampings wherever they constitute an adhesion surface must be free from burrs or razor edges. Commercially, a finish produced by tumbling will meet these requirements. Moreover, the shape of the stamping must take into account such forms and depths as will facilitate the uniform deposition of the brass plating.

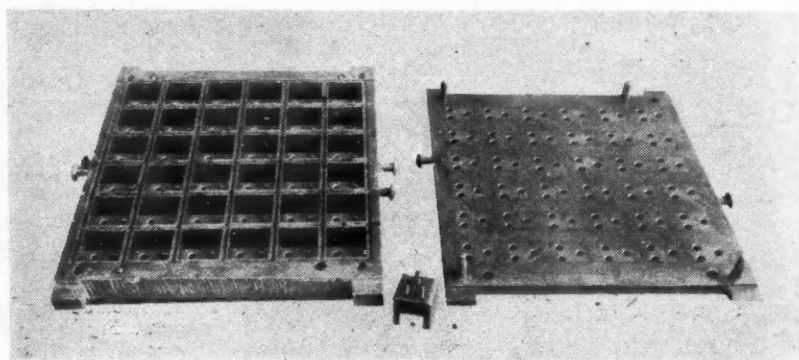
Brass plating requires precise control at every turn. The brass is of definite composition which must be of



Press for molding and vulcanizing rubber parts

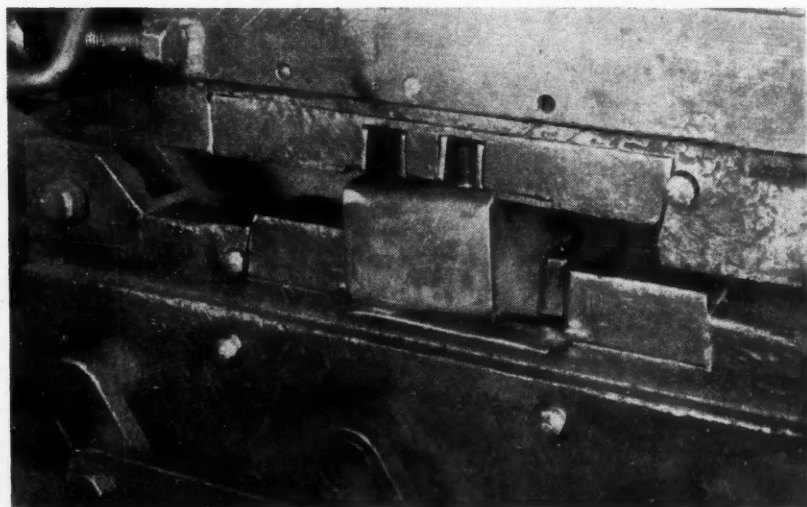
example, after plating, the parts must not be handled on the adhesion surfaces as finger marks may prevent adhesion. In addition, since brass is very sensitive to atmospheric conditions and spots readily in damp weather, the assembly should be completed within a few hours. In practice, after the metal is plated it is coated with rubber cement. This serves two purposes—first it offers some protection against atmospheric attack; second, since this cement consists of rubber-adhesion stock it aids in the adhesion of rubber to metal.

Following these preparatory steps, a properly shaped piece of rubber stock is set into the stamping and the prepared part is ready for molding. It is very important to have the rubber stock conform closely to the stamping, otherwise the excessive flowing of stock in molding will carry away the cement



Mold for motor mountings

(Below) Motor mounting being tested for adhesion at edges



coating and cause adhesion failure.

In general, the mold is designed so that pressure is perpendicular to the adhesion surface, thus affording the greatest pressure of rubber against metal. The successful manufacture of rubber-to-metal parts depends quite considerably upon the proper mold design. In all cases, the mold design should be worked out with the company manufacturing the part, for there are innumerable details which are important from the adhesion standpoint.

In the molding operation the part is vulcanized between steam-heated platens, the temperature depending upon the requirements of the part. In this operation the part is formed to the proper shape, the rubber is changed from a soft plastic to an elastic solid and, at the same time, the rubber is adhered inseparably to the metal.

After vulcanization, the excess flash (or overflow) is removed either by trimming; by machine or hand, depending upon the part; or by buffing with steel brushes. Some parts must be lacquered and this is done by coating the rubber with a special oil and gaso-

line-resisting lacquer which, at the same time, is flexible and will stand considerable elongation and bending without cracking.

The final operations consist of physical tests well up to the elastic limit of the parts; also final inspection before packing. The mechanical parts are tested for adhesion and physical properties in machines which pull the metal members apart either in direct tension or in shear up to the maximum limit without distorting the metal. Any part showing lack of adhesion more than 1/16 in. deep is rejected.

Here indeed is an outstanding technical development brought about by the cooperative effort on the part of the user and producer. The brief résumé given above, serves to emphasize the painstaking care that is necessary to fabricate rubber-to-metal parts on a commercial scale.

JUST AMONG OURSELVES

Harvest of the '80's Coming in to Haunt

IN the December issue of *Review of Reviews*, Donald A. Laird recalls that when the Ford Motor Co. abandoned the Model T, it bumped into a production problem of greater magnitude than the cost of retooling, or the physical setting up of new production schedules. An official statement from those historic days said: "men . . . not machinery . . . delayed us . . . work on the new Ford requires more skill . . . men have had to be re-educated . . . where human beings are concerned, calculations are likely to err." On this and other bases, Mr. Laird concludes that no matter how far mechanization proceeds "finding men of sufficient intelligence to operate complex modern machinery is the most vital problem of industry today."

Last July, at the Seaman Body plant in Milwaukee, former woodworkers were initiated into the mystery of all-steel body building. The woodworkers were placed with trained crews at apprentice wages, and were graduated to skilled classifications as rapidly as foremen decided individuals had mastered the particular branch of the craft to which they were assigned. About 300 men, ages 24 to 69, were "adjusted" vocation-wise, in less than a year.

They were skilled workers to begin with, and it is doubtful whether an equal number of men in the unskilled classifications could have been made capable of earning skilled wages in the same crafts in anything like the same length of time.

Mr. Laird believes that the

number of persons of "inadequate general ability" is growing in the United States—partly because previous generations of industrialists encouraged the importation of cheap labor from Europe, and such immigration has contributed broadly to our docket of the unemployable.



Sincerely yours,

MANY homes are happier for new automobiles this Christmas. The industry crosses Dec. 25 with peak production schedules. Detroit workers are spending money, and Henry Ford has applied private sanctions against Italy in an effort to promote peace on earth. There are strikes here and there in the industry, and Congress meets in January. As this pre-Christmas issue goes to press, the editor is conscious that our blessings are not unmixed but feels, nevertheless, the old wish is still justified—Merry Christmas to everyone who reads this—and may your New Year be wrapped in cellophane.



Two Voices Raised Against an Error

TO the voice of M. E. Coyle, Chevrolet's president, was added that of W. J. Cameron for the Ford Motor Co. last week on the subject: Industry can't pos-

sibly absorb all the unemployed, which reach in the aggregate a larger number than the whole number employed by industry during our prosperous years. Mr. Cameron's rebuttal of the Washington point-of-view on this question was vigorous and timely, and reached a wide audience. Too many voices can't be raised against the view that industry should assume the responsibility for workers in non-industrial vocations.

An Equipment Maker Turns to Servicing

FOR eight years, we have not bothered about the replacement trade in any way." This sentence, of some significance, is from a letter to the writer, volunteered by the president of a prominent company in the original-equipment field. He continues: "I am strongly of the belief that if we pay more attention to service operations, we are going to catch up with much of the trouble existing in the field today."

"We have been highly technical; we have built wonderful vehicles, very efficient engines, and done a superb job of engineering in every way. Now we should pay attention to the operation of the vehicles; teaching, schooling and otherwise improving the service men so that they are no longer "grease-balls," but capable of conducting institutions of adequate value to the people who own and operate motor vehicles."

The author of these views, which seem worth considerable support, put them into practice recently in presenting a paper to an S.A.E. section. Scheduled to present a paper on the specialty manufactured by his company, he dwelt briefly on its engineering aspects, emphasized the service aspects—and got an unexpected amount of interest from his audience.—H. H.



No More Tracks!

The City of New York is in the midst of a sweeping replacement of its electric surface-cars by buses. Philadelphia, traditionally conservative, will shortly follow suit if its aggressive mayor-elect has his way. Elected mayor, after a term as city comptroller, Mr. Wilson presents the case for buses from a hard-headed business point of view. Designed specifically for the city fathers of Philadelphia, his reasoning is applicable to almost any city in the world.

By S. DAVIS WILSON

Mayor-Elect, City of Philadelphia

Buses Will Inevitably Public Demand, Says

THE first electric street-railway using the overhead trolley principle began operation on May 4, 1888, at Richmond, Va. The supersession of the horse-cars in use at this time was practically completed within the 10 years which followed.

Since 1920, the electric street-railway has undergone a similar supersession by modern forms of bus transportation. Today the advantages of the bus over the trolley car are as acceptable as those of the trolley car over the horse-car 48 years ago.

Authoritative data showing a positive trend of trolley car supersession by buses are ample and comprehensive. The evidence is also pronounced of public demand for the modern form of motorized transportation.

The outstanding features of the motor bus over the trolley may be briefly mentioned as follows:

The motor coach or bus is an independent transportation unit, since it can be operated on any convenient street or highway, competing with the private passenger car in this respect. The costly item of street railway construction and maintenance is eliminated, with the attending inconveniences encountered, especially on congested city streets.

In the case of obsolescence of decrepit units, the bus system is simple, since the supersession of old models by new ones completely modernizes the system, there being no tracks or other equipment involved. The off-line flexibility of the motor bus is unlimited, permitting routing and re-routing of lines to meet rapid fluctuations.

Full street-mobility of the motor bus

is also an outstanding feature, since it provides safety and convenience in receiving and discharging passengers at the curb. This feature also makes possible the by-passing of traffic obstructions, thereby avoiding unnecessary delays. In the case of buses, shorter headways are possible by the careful selection of a fleet of buses having a proper range of passenger-carrying capacities, thus reducing the waiting time between buses to a minimum. This is also an important factor in the general problem of traffic control.

In general it may be said that motor bus transportation synchronizes with all other forms of motor traffic present today on streets and highways, a feature not to be had in rail transportation.

To the individual passenger the motor bus approaches the passenger car in speed and comfort. In this is considered the air-cushioning effect of pneumatic tires as contrasted with steel wheels on steel rails, and the absence of the hum and jangling noises of the trolley car. Similar effects are reflected in starting. These contributed to the

trend of public demand for motor-bus transportation.

The city government, aside from its desire to provide its taxpayers with a modern form of transportation so essential to its progressive development, is concerned with general traffic problems, which it must meet and solve, also with the paving and maintenance of its streets and highways. When it is considered that there are over 600 miles of street railway cutting into Philadelphia's paved streets, this presents no small problem. Further, when it is considered that this great stretch of railway, with its overhead, surface and underground equipment forms a network throughout the city, as contrasted with smooth, unobstructed, paved streets, we have some concept as to the detraction from the standpoint of appearance and the beautification of the city, which can be attained by the removal of existing railway obstructions. In this respect we have also to consider the elimination of much distressing noise.

From the operator's point of view, bus operating experience has shown a

sufficient earning capacity can be produced with which to turn over the entire bus investment annually, demonstrating the economic soundness of bus supersession.

Considered entirely upon its merits, that is apart from any existing encumbrance imposed by present street railway holdings, a supersession of the street-railway system by buses is inevitable, since it brings in sight first, the popular five-cent carfare because of operating economies, and second, a satisfaction of public demand for a modern form of motorized transportation, involving the many desirable features previously mentioned.

In connection with the discussion of the trends of motor bus supersession of trolley cars, it is to be understood that this does not apply to high-speed lines in general and subways in particular, since these are part of the plan

In view of the plan to modernize the transit system of the City of Philadelphia, including those lines operated by the Philadelphia Rapid Transit Company, which in part involves the supersession of surface lines now operating trolley cars by motor coaches (buses) it is held advisable for economical and other reasons to curtail any and all expenditures contrary to the promotion of this plan.

There are in Philadelphia approximately 624 miles of tangent and special track, of which approximately 63 miles have been unused or abandoned. The average remaining service life, based upon a service-condition percentage of 22, would indicate an average remaining service life of 5½ years for the system. This is slightly over the average life required for the modernization plan.

In view of these facts, it is held that

the most economical program for the maintenance of the present system would be based upon salvaging of first, the service life remaining in existing abandoned trackage, and second, that of approximately 10 per cent of the total existing trackage, or 62.4 miles, which under the modernization plan would be abandoned annually by supersession. Thirdly, since a 50 per cent increase in the number of passengers carried over modernized lines is further contemplated, certain lines can be eliminated entirely, thus making available additional trackage, the remaining service life of which can be salvaged for maintenance of the portion of the trackage remaining in service.

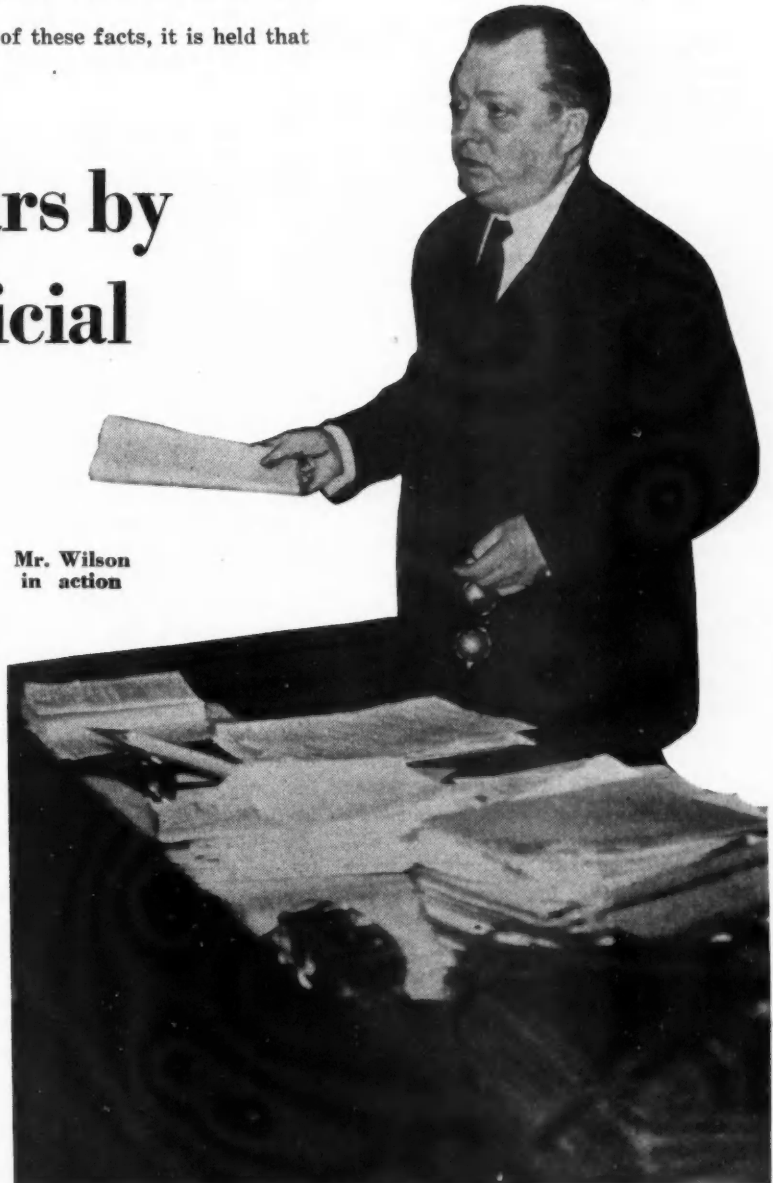
Replace Street Cars by Philadelphia Official

for modernization of Philadelphia's transportation system.

With respect to the supersession of trolleys by buses in the denser urban transit districts, the Manhattan modernization program offers ample evidence as to the adaptability of buses and their advantages over trolley cars in relieving congestion.

The first step in this program took place when 4th and Madison Avenues were motorized with 95 forty-passenger buses which superseded the trolley cars along the entire route. In this case noise and congestion were greatly relieved and the riders were increased at least 80 per cent. The success of 4th and Madison paved the way for a city-wide movement for the substitution of buses for trolley cars. The present program includes Broadway, Lexington Avenue, 6th, 7th, 8th and 9th Avenues, 34th Street and other cross-town thoroughfares. Eighth and 9th Avenue lines were put in operation Nov. 12, 1935. The program will involve replacement of trolleys with 656 coaches at a total expenditure of \$7,550,000.

Mr. Wilson
in action



Planning of Retail Distribution Gets Consistent Attention

With the industry approaching one of its biggest sales years, the General Motors Corp. has men in the field studying marketing areas and laying the groundwork for an attempt to get maximum volume from each area through a logical dealer set-up.

RETAILING motor cars presents an opportunity that is probably unequalled in any other line for the rational planning of distribution.

For the most part manufacturers of other kinds of merchandise must take their retailers where and as they find them. But in the automobile business where the dealer buys the bulk of his merchandise not from many manufacturers, but from one factory, or at most two or three, the car companies are in a unique position to exercise control over the location, size, methods and other characteristics of their retail outlets. Moreover, they have or can get a wealth of pertinent data to guide them in the exercise of this control. In few other lines, for example, is there the information which the motor vehicle registration laws provide for the identification and evaluation of markets.

Yet despite these conditions so favorable to planning, it is probably fair to state that to a large extent, the industry's retail organization, like Topsy, just grew. There is little reason to doubt that opportunistic policies in the establishment and maintenance of dealer organizations, have tended to make the position of the dealer, which the depression has already made difficult, even more difficult.

Now that the industry appears to be definitely on the upgrade again, the time seems ripe for the introduction of a greater degree of planning in the organization of its retailing.

Leading factories are evidencing a growing appreciation of the desirability of moving in that direction.

The General Motors Corp. has been working along this line for approximately a year.

For the present, the corporation is concentrating its efforts on multiple-

poration and the interested car divisions. This study is no perfunctory matter. It takes time and would be impossible if data and recommendations came piling in from all over the country at about the same time.

By Don Blanchard

*Editor, Automobile Trade Journal*¹

dealer city markets. It is measuring these markets and laying plans for a dealer set-up that will get the potential available and get it on a sound basis. In other words, the market itself, and not how many outlets some competitor has, is being used to determine the dealer set-up.

The corporation is not trying to work any miracles nor is it aiming at an over-night revolution. The work is being done slowly, carefully and cautiously. It started about a year ago in Boston where the general plan was developed. After approval by top GM executives, this plan became the pattern for the work that has been done and is to be done in other cities.

Accustomed to doing things in a big way, the corporation might have been expected to throw a big force of men into the field to get the job cleaned up in a hurry. This was not done for a variety of reasons. In the first place, before any plan for a particular city is adopted, all the information developed on that area by the men who did the field work and by the general staff at headquarters in Detroit, together with their conclusions and recommendations, is studied in detail by Vice-President R. H. Grant and other important executives of the cor-

Another potent reason for making haste slowly was that men who are really fitted for this work, mentally and in experience, are not plentiful. They must have practical knowledge of selling, markets, finance, etc. Moreover, they must know what facts to get, where and how to get them, how to analyze them, and how to draw sound conclusions from them. None of the men selected for the work has had less than 10 years' field experience with the organization.

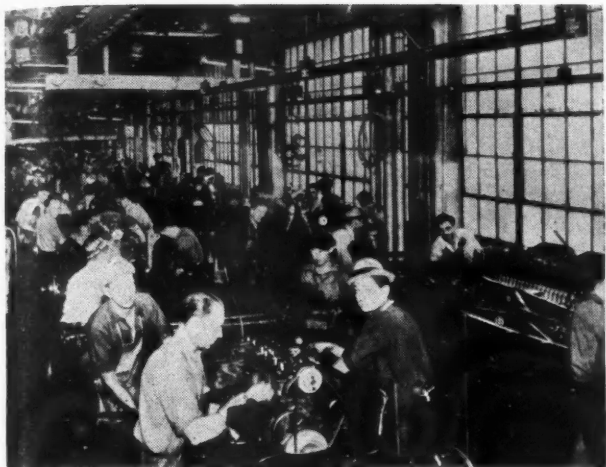
There is nothing theoretical or academic about the program—on the contrary the approach is intensely practical. The work is being done by practical men with a practical viewpoint. They keep constantly in the foreground of their minds that they are dealing with real problems involving real men, real money, etc., and not with hypothetical case studies.

The program is under the direct supervision of R. F. Schreitmueller of the GM sales section in Detroit. Mr. Schreitmueller has had some 13 years' experience with the corporation and has been associated with Mr. Grant since the latter's Chevrolet days.

The field work is done by a staff of four men, two of whom work exclusively on Chevrolet distribution, while the others devote their efforts to the other car divisions. Working with these men in the field, are men appointed for the purpose by the division concerned. At headquarters in Detroit, there is a staff of men who work up all available information regard-

(Turn to page 835, please)

¹ Formerly editor, AUTOMOTIVE INDUSTRIES.



Chassis assembly department of the Hudson-Terraplane plant.

PRODUCTION LINES

Cast Grilles

Another progress report on the die-cast radiator grilles. The biggest of them all is the Chrysler Airflow casting, which tips the beam at around 23 lb. Incidentally, this activity is an object lesson for the economist. Here is an entirely new industry aborning. One organization alone, the Doehler Die Casting Co., estimates that the new business will take over 5,000,000 lb. of high-grade zinc alloy material for 1936 requirements. If we add the others, the total may well exceed 10,000,000 lb. or 5000 tons. In addition to the new business for the die caster, there is the extra tonnage for zinc producers, and new business entirely for electroplating and electro-cleaning specialists and suppliers.

Proud Father

A unique record of some kind has been established in a fine little plating plant just started in Toledo. These people specialize in electroplating of die-cast automotive products particularly. The company was started by the father—each of four sons is handling a subdivision of activity—and a daughter helps the son in charge of the accounting department. Is the father proud—and wouldn't any of us be if we were in his shoes?

Steel Pistons

Developments in the light-weight steel alloy piston have come to a head with dramatic intensity, considering the veil of mystery surrounding the situation early this year. Pontiac has announced the adoption of an alloy containing small additions of nickel and chromium. This piston is tin-plated. It has an oil ring at the extreme end of the skirt. The

Lincoln-Zephyr uses steel alloy pistons containing high percentages of copper. Three rings are located at the top, and skirt sides are cut away to reduce weight. At least one of two other large producers may go to the alloy steel piston by next spring. We learn this week that another car maker, not in the picture before, has ordered some 10,000 sets of new pistons for experimental production.

Auto Radio

Just as we were entirely convinced that auto radio is one of the most essential pieces of equipment for any car, we read that in St. Louis the police department is starting a punitive war on it. Seemingly, the authorities feel that the radio has something to do with traffic accidents. Not only do we doubt the truth of this conclusion, but we are inclined to believe that this form of prejudice dates back to pre-radio days when we all speculated as to its desirability. Today anyone who has experienced the enjoyment that car radio brings will fight to keep it in his car.

Diesel Tax

For the benefit of those who were interested in our survey of diesel fuel tax in this country, may we add a couple of notes. In the first place, both Kansas and Nebraska are really in the doubtful column since their law does not specifically mention diesel fuel. However, Kansas has a broad policy which it is believed would adequately and legally cover diesel fuel tax, if and when it became economical to collect it. If we eliminate Nebraska for the time, we still have the same balance because a recent return from New Mexico indicates that its fuel tax comprehends a

motor fuel of any character on motor vehicles of any character. Thus the tax on diesel fuel, if collected, will be five cents per gallon—the same as it is for gasoline.

With Flame

At the last convention of the International Acetylene Association they made available a number of technical bulletins that will be of interest wherever oxy-acetylene is used. Here they are: "The effect of flame cutting on steel," "Bronze welding or hard brazing of cast iron and malleable iron," and "Tests for the selection of operators." Then, too, they had a mighty valuable paper entitled, "The handling, storage, and proper control of compressed gas cylinders," by F. R. Fetherston. We are so sure you can profit by the material in these publications that we will volunteer to get copies for anyone that asks for them.

Flame Hardened

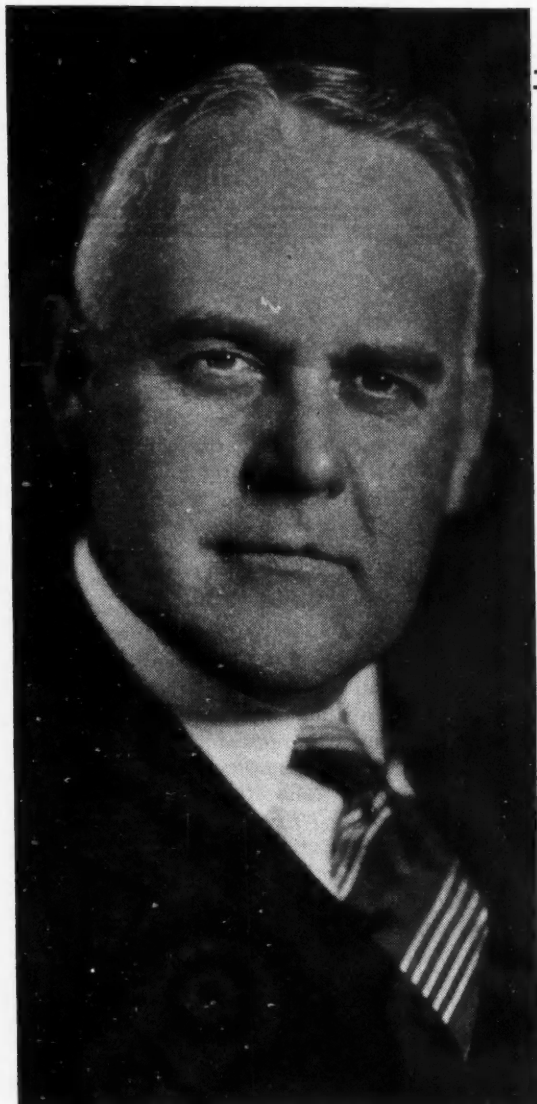
J. J. Crowe mentioned an interesting application of flame hardening that may suggest something in your own plant. This particular job was the hardening of the open end of small wrenches. The wrenches come down to the operator's station on a small conveyor. He plays the flame for 15 seconds, then trips the work into a pan of water for quenching. Sounds rather interesting as a means of hardening small parts at localized points.

Many Welds

According to Manning of Briggs, the Lincoln-Zephyr body has 8000 welds of different kinds. That is indeed a respectable figure.

—J. G.

MANUFACTURING
MANAGEMENT
METALLURGY



S. Wells Utley

ALTHOUGH possessed of but 6 per cent of the land area, and 6 per cent of the population of the world, our people enjoy more than one-third of its total wealth, and our total national income for the three worst years of the depression was greater than the capital saved by the entire human race from the beginning of time up to the date of the American Revolution.

How shall we account for these facts well known to each one of you? The most astounding thing in human history is the progress made by man in the last century and a half as con-

trasted with his lack of progress in three thousand centuries before. It hasn't come to us because our country is richer than any other, because our people are more intelligent than those of centuries ago, because they are more industrious or more skillful. It isn't a gift of God bestowed on a favored land. Such amazing changes don't just happen; they come only because of positive, definite forces as eternal in their action as the laws of physics or of gravitation.

The twelve years succeeding 1764 marked the birth of a change in human relations, more important than the happenings of all previous time combined. During that period three human beings each made a contribution to human thought, whose combined effect separated the former world from the world to come as completely as though a curtain had been rung down blotting it out forever.

In 1764 James Watt, a Scotch mechanic, to whom the Labor Board of his Code Authority (then known as a Craft Guild) had refused a license to open his own shop as an instrument maker on the ground that he hadn't served his full time as an apprentice, recognized the expansive power of steam and invented an engine to harness that power. In 1776 Adam Smith, a Scottish professor of moral philosophy, plumbing the pages of history, and scanning the thoughts of those who had gone before him, outlined the principles which motivate the actions of free men in economic society, and in his "Wealth of Nations" described the truths underlying the system of Economic Voluntarism, or the Enterprise System, the system miscalled by Karl Marx the

New Crisis Demands

"Capitalistic System." In the same year, Thomas Jefferson, a philosopher, steeped in the teachings of the great minds of the past from the time of Socrates and Plato down through the more recent days of the French political philosophers, outlined in the Declaration of Independence the principles of government and politics which should govern man in his political life if he was in truth to be a creature made in the image of his Maker.

Watt increased the strength of man's arm and freed him from human slavery, for with the constant cheapening of mechanical energy slavery became an uneconomic institution; two and a half centuries before Luther had proclaimed the freedom of the human soul from the authority of Church and State; following his lead and applying the same principles to the Economic field Smith pointed out that by removing the fear of force, oppression, regimentation, and restriction from the human mind you released in enormous quantities the mental energy, the Spiritual force which is the driving power of all human actions; and Jefferson pointed out that in the State, the Divine, God-given, inalienable rights belonged not to kings, dictators or governments, but to ordinary human beings such as you and me. For the first time in history man had come into his own, for the first time he was free to develop himself to the full stature which God had intended, for the first time he was assured of a definite reward for his individual effort.

Watt recognized a principle and built an engine to harness and control it; Jefferson recognized and expounded certain governmental principles, but built no engine to put them into operation. It was eleven years later that the Constitutional Convention built the structure, the engine if you please, which should make the principles enunciated in the Declaration a living, stimulating force in the life of a people; for the Constitution expounds no principles not already a part of the Declaration of Independence, it simply sets up a machinery of government under which those principles can operate. It is akin to a building housing a great industrial plant. Superficially

Employers Show Leadership to Labor

By S. WELLS UTLEY

President, Detroit Steel Castings Co.

that building has no relation to the product, but, basically, the satisfactory operation of the machines, the turning out of a high-grade product, is possibly only because the building keeps out the wind, the rain, and the snow, and provides warmth, light, and satisfactory working conditions for both men and equipment.

Not only did this document provide the protection necessary for the operation of the principle of Liberty—civil, political, and economic—in this country, but its effect spread to the institutions of every other country in the civilized world. From its adoption to the time of the World War it served as the model for every old government whose structure was revised and every new government created, and it stands today as the oldest charter of government in existence. Strangely enough, since the close of that war, no single new government has been set up, and no old government has been changed, except on principles diametrically opposed to those enunciated in this Declaration and its supporting Constitution.

Watt's engine didn't amount to much as power plants go today, a basement filled with them wouldn't produce the energy consumed in this hotel tonight. But under the inspiration of the philosophies of his two great contemporaries, thousands of men have seized upon his idea, and developed it until today we generate electrical energy equivalent to the labor of one strong man for a ten-hour day at a cost of less than one cent, and as a result of the principles developed by this triumvirate we have in a short space of time made more progress, and by progress I mean "the constantly increasing share of more and more people in more and more of the good things of life," than had been made in all previous time. Because of the efficiency of these principles in motivating human actions we, in this country, have conquered some thirty previous depressions, emerging each time onto a higher plane

than the one occupied before, without hitherto having to scrap the Constitution or abandon the principles underlying it.

In all countries today the principles which have been the motivating force of the tremendous progress of the civilized world are being challenged and attacked: first, by those who having failed to achieve results, feel that inasmuch as they are now on the bottom, if society can be turned upside down they will then be on top; and by those who, having spent much time in reading and consorting with immature minds, feel that they have become masters of all the things of which they have had no experience. Strangely enough, these people make no attack on the material side of our civilization. So far as I know, no one has advocated breaking up all the power plants; but they do attack the spiritual side, and advocate tearing out, disrupting, and casting aside those principles which have motivated man's spirit, and which alone have made his material accomplishments possible. If you travel westward from San Francisco you will cross all Asia, all Eastern Europe, all Central Europe, and only when you come to a thin area bordering the At-

lantic will you find a single nation whose government still believes in the freedom of the individual, or in the philosophies of Christianity and the sanctity of the Christian Church. Masked under different names, the present philosophies all provide for a tremendous increase in the power of the person at the head of the central government, a suppression of the rights of the individual, both political and economic, a denial of any rights to minorities, the disappearance of the authority of the legislative branches of government, and the disappearance of the courts as the protector of the individual.

In our own country the President has stated that America must have "a permanent readjustment of many of our ways of thinking, and, therefore, of many of our social and economic arrangements," and "we have undertaken a new order of things; the outlines of the new economic order rising from the disintegration of the old are apparent." In this statement he would appear to refer to the authoritarian State, defined by Mussolini as one in which "the Government is to be the sole and supreme arbiter of the needs of society." Under his leadership we had in fact a bloodless revolution by which groups within the Government assumed and usurped power for the purpose of completely changing the nature and scope of that Government, and since

... No Road for Retreat

The American System of Enterprise, which guarantees to the individual freedom to work, acquire property, and enjoy the use of it, is being threatened dangerously by subversive thinking, according to Mr. Utley. The remedy, he finds, is for employers to exert their natural qualities of leadership—make available to their employees the truth about the illusions which are being held out to them by the proponents of the many "isms" now flourishing in the United States. The address, reprinted herewith, was given before the recent annual convention of the Associated Business Papers, Inc., national organization of the business-publication industry.

that time we have had in power not a National Administration, devoting its efforts to the welfare of the country, but rather a revolutionary, political party seeking above all things to change the fundamental characteristics of our social, economic and political order. The supreme question confronting the American people tonight, transcending in importance all other questions combined, is whether they will continue to cherish and defend the principles which have been the main-spring of our progress, or whether they will abandon them for those under which man stood still for thousands of years. I am not fearful of the verdict of the American people provided they know the truth; provided they realize that those who live by the bounty of government are not citizens but subjects; that a "kept" man cannot be a free man; that the man who gets his income from government, whether it be through wages, bonuses, doles, or government contracts, has lost both his right and his ability to criticize and oppose the government from which he gets his living. I am fearful lest, beguiled and bewildered by meaningless promises, confused by the glittering balls being tossed into the air, they fail to realize the insidious nature of the things they are doing, and fail to recognize the ultimate end of the road they are traveling.

With the problem of pointing out to the American people the dangers inherent in the course we are traveling; the inevitable destruction of American principles if we continue on that road, you gentlemen of the business papers, and you gentlemen of the daily papers, have a supreme responsibility. My excuse for being allowed to exist in the economic field is the production of social wealth through the furnishing of steel castings; yours is the production of wealth, i. e., increased knowledge, through the furnishing of correct information and the stimulation of sound thinking. The time has come when neutrality has ceased to be a virtue. Either you are in favor of the American System, with its provisions for orderly change and improvement, or you are in favor of some form of the "Collectivist system," with all it implies. There is no such thing as "Constructive criticism" of a revolution. The First Amendment to the Constitution, guaranteeing to you the freedom of the press, was put into the Bill of Rights in order that you in turn might be free to defend the rights of the rest of us as exemplified in the Fifth and other Amendments, and only so long as you fulfill that duty are you entitled to your own protection. Make no mistake in this, that when, either through

armed resurrection, or subtle usurpation, the rights of the common man disappear, at that same time the rights of the press will go with them, as they have in every European nation.

What then is our responsibility to our employees in this critical situation? If we honestly believe that American principles as exemplified in the American system have given to the employee a greater opportunity for advancement, a greater opportunity for happiness, a larger share in the wealth produced by his hands, than the principles which have operated in any other social system, then most assuredly we have a responsibility to help him to protect those principles for himself and his children. We as management have advantages which he cannot enjoy; we possess sources of information which he cannot have. We meet in great assemblages of this kind, where we bring together the best of our economic minds, the best of our monetary minds, the best of our legal minds, together with men skilled in all lines of business. It is our responsibility to make available to him, in language which he can understand, the lessons and the information we are privileged to gather.

I know there is a feeling abroad that those of us who sit in the seats of management in industry cannot effectively talk to those fellow employees who work in the shop, that for some reason or other they resent our being helpful to them. Suppose we explore this thought for a moment.

Some decades ago organized labor began to develop in this country. It was a foreign seed, transplanted from those nations where a definite caste system divides men into hard and fast classes, where generally speaking a human being moves only in a horizontal plane, never in a vertical one. From within this organization labor leaders have been constantly trying to sell the idea to the American workman that between himself and his employer there is an unbridgeable gulf, that his interests and those of the employer are always opposed, that they can be advanced only by turmoil and strife, and never by cooperation. After half a century of effort, the labor leader has dismally failed to sell that idea to the American workman; otherwise our in-

dustries would be 100 per cent unionized irrespective of anything we could do.

But, strangely enough, while he has failed to sell the idea to the workman, he has succeeded in selling it to management, and he enjoys the political power he does today because we on our side of the desk have failed to see through the sophistries which our men have recognized so easily. We fail to realize that these men believe, with perfect right, that these enterprises are as much the accomplishment of their lives as they are of ours. We fail to realize that many a sweeper of our floors and a washer of our windows, many a man who makes a mold or tends a machine, has more whole-souled loyalty to the company to which he has given his productive years than do some of those in official capacity. I venture to say there is no man here tonight of ripe industrial experience who can't point to cases in his own shop where workmen have risked their lives and sometimes lost them to save the lives of other workmen, or perhaps to avert a threatened accident to some piece of machinery. There are no finer tributes to the highest qualities of human beings than the things which pass as humdrum experiences in the daily life of those in the workshops of this great country of ours.

In this present crisis, the greatest which has confronted us since the Pilgrims landed on these shores, we have a tremendous responsibility for leadership to these men. Will we accept it or will we shirk it? Oh, I know if you put a notice on the bulletin board telling employees they must do this or that, they must vote for some certain man, you'll not get a satisfactory reaction. As a matter of fact, you'll get exactly the same reaction from them that you yourself have when someone orders you about. But if you devote a small part of the thought, the tact, the psychology to selling these men on your leadership, that you do to selling some prospective customers on the quality of your product, you will find that these employees will follow you into the very jaws of hell, and if you don't do this, in the not-distant future, you will find yourself, with them, in the very bottom of hell, with no road left for retreat.

Light Gray Iron Specifications

The Committee on Cast Iron of the American Society for Testing Materials has nearly completed a new specification for light gray iron castings. A sub-committee of this committee on Correlation of Test Bar and Casting is making a study of the

current specifications in order to harmonize the values given in these specifications for test results. The work on impact testing is continuing for the present. This comprises the development of a suitable testing machine for the repeated drop test.

NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools



Hardinge precision
milling machine.

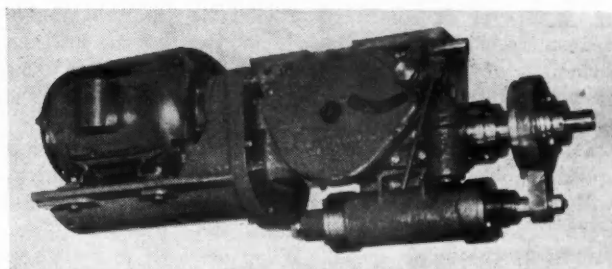
Milling Machine For Laboratory

The Hardinge MD-5 precision milling machine is designed for tool room and laboratory purposes. This recent development of Hardinge Bros., Inc., Elmira, N. Y., employs a two-speed reversible motor connected by an endless V belt to a three-step pulley to give six forward and six reverse speeds ranging from 120 to 1190 r.p.m. The levers at the headstock operate two electrical motor controls, one for low, stop, and high and the other for forward and reverse. The feed screws revolve in long adjustable nuts and have friction dials graduated in thousandths of an inch. The weight of this machine is 825 lb.

Semi-Automatic Plating Machine

The Udylyte Company, Detroit, manufacturers of polishing and plating supplies and equipment, announces the development of a new semi-automatic plating machine which is said to give better plating through closer regulation, and at a reduced cost. The work racks are hung on a chain conveyor and are carried away from and brought back to the operator at a definite rate

Millholland auto-
matic unit.



Improvements in Millholland Drilling Unit

The Millholland Sales & Machine Co., Indianapolis, Ind., announces improvements in its No. 3 automatic drilling unit, which now has a 3 in. stroke and uses from 1 to 3-hp. motor, with a capacity up to 1 1/16-drill in steel. It has a high speed capacity up to 3000 r.p.m.

of speed. Since each piece is subjected to identical plating conditions, such as plating time, current density, etc., the machine can be set to produce work with any desired thickness of plating. A chain speed from 1 to 4 ft. per minute is available.

The Udylyte machine is made in a wide variety of sizes to conform to the individual plating needs.

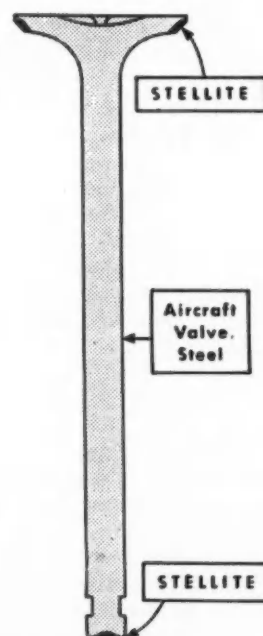
Thompson Aerotype Valve

An interesting development by Thompson Products, Inc., Cleveland, Ohio, is the Aerotype valve which has Stellite inlaid in the valve seat and stem tip. This design is said to follow aircraft engine practice.

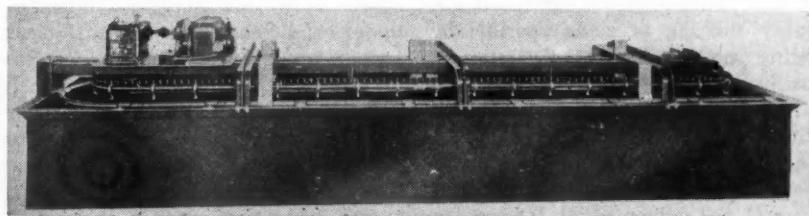
An oxy-acetylene torch with a flame temperature of 2300 degrees is used to flow the material on to the grooved valve head. The valve is fastened on

Each unit is equipped with an automatic non-repeating clutch with positive knockout. A number of units can be started from one control valve, but feed disengagement is automatic on each individual unit after it has completed its cycle of quick approach, work operation and return. Combining cam and hydraulic operation, this equipment can be mounted either horizontally or vertically or at any angle desired.

a foot-controlled turntable which turns slowly as the material is applied. The head of the valve fits into a recessed copper pad which conducts the heat



from the valve to prevent burning, and there is also a similar pad around the valve neck. The operation takes from 6 to 12 minutes depending on the size of the valve.



Odylyte plating machine

Differential Speed Changer Must Have Feed Back for Inverse Torque Variation

A GOOD many inventors in this country have been working on a type of continuously variable transmission which is based on the principle of the differential gear. It is well known that if you jack up one end of the rear axle of a car and then start the engine, for a given engine speed the wheel which is off the ground will turn twice as fast as if both wheels were in contact with the ground and turned at the same speed. When one wheel is entirely off the ground the other is held from rotation by its contact with the ground and the friction at the point of contact. Thus two different ratios of transmission are obtained, one twice the other. Now the object of the type of transmission referred to is to get an infinite number of intermediate ratios by letting one side of the differential slip more or less. Thus, if one of the differential side gears were allowed to turn at half the speed of the differential housing, then the other side would turn at 1.5 times the speed of the housing, and its speed would therefore be just midway between its two extreme values.

One defect of this type of mechanism would be a very low efficiency, because the side gear that slips has the same torque on it as the one that is being driven, and if the ratio of slip to the speed of the driven gear is one in three, for instance, then one-third as much power as is being transmitted is being wasted in overcoming friction. Moreover, in most cases the object of increasing the ratio between the speeds of the driving and driven members is not so much to reduce the speed as to increase the torque, and the mechanism described in the foregoing will not give an increase in torque. For a given torque on the housing or spider, the torque on one of the side gears will be the same whether both side gears turn at the same speed or whether one is held from rotation and the other turns twice as fast as the housing, or finally, whether one side gear is permitted to turn at a reduced speed and the other therefore turns at a higher speed than the housing.

If waste of power is to be prevented, in such a mechanism, then a retarding moment must be applied to one side of the differential that will result not merely in the generation of heat but in an increase in the torque on the driven shaft.

A simple mechanism of this type was described in a recent discussion before the French Society of Automobile Engineers. The drive described is said to be known as the Houldsworth drive and to be in extensive use in spineries, but it was also stated that an automobile transmission based on the same principle, but more refined mechanically, was under development.

Referring to the diagram, the power is transmitted from one side of the bevel-type differential gear to the

When shaft A turns at exactly twice the speed of housing C the driven shaft is positively held from rotation.

When shaft A turns between 1 and 2 times as fast as housing C, the driven shaft turns slower than the driving shaft (low forward speed).

When shaft A turns at the same speed as the housing the drive is direct.

When the driving shaft turns at a lower speed than the housing an overdrive is obtained.

The ratio of the speed of the housing to the driving shaft is controlled by the belt. Whenever power is being transmitted there is a torque on the housing of the driving gear, which in conjunction with the speed of the housing represents a certain power. This power, instead of being wasted in

friction is returned to the driving gear by the train consisting of two pairs of spur gears and a pair of pulleys and belt.

One thing that is not quite clear from the drawing is how the belt can be shifted when one pulley is cylindrical and the other conical; the explanation probably is that the shaft carrying the cylindrical pulley is swung with its bearing around the axis of driving shaft A whenever the belt is to be shifted. This dual motion of belt and pulley shaft would be rendered unnecessary if two conical pulleys were used.

A considerable variation in forward speed together with an overdrive could be secured by the belt and pulley combination alone, but no reverse motion could be obtained with a single belt, and it is probably the need for a reversible drive that led to the use of the mechanism here described. The illustration is shown here not because it is believed the mechanism has any possibility as an automobile transmission under conditions obtaining in this country at present, but because it clearly illustrates the "feed-back" principle which must be applied in some form if the differential gear is to be used in a practical way to change the speed ratio between driving and driven shafts and at the same time change the ratio of torques about inversely.—P. M. H.

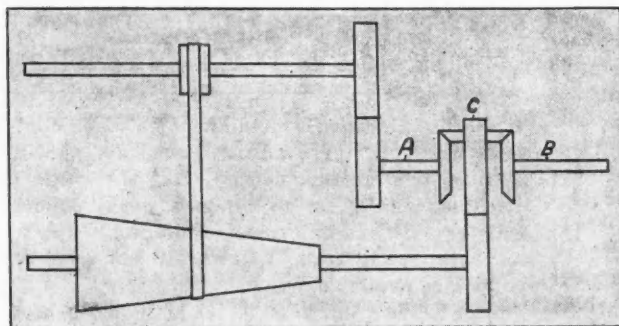


Diagram of the Houldsworth Drive which is reported to be under development

other, A being the driving and B the driven shaft. The differential housing carried a spur gear C which meshes with another similar gear on the shaft of which there is a cone pulley. A belt running over this pulley drives to a pulley on a shaft which is connected to the driving shaft by a pair of equal-sized spur gears. It would seem that the driven pulley also should be conical to permit of shifting of the belt, but probably shifting is made possible by changing the distance between axes of shafts by swinging the upper shaft in an arc around the driving gear shaft A whenever the belt is shifted.

When driving shaft A turns more than twice as fast as the differential housing C, the driven shaft B turns in the reverse direction.

Planning of Retail Distribution

(Continued from page 828)

ing each city to be studied and these data are supplied to the field men in advance so that they have only to fill in the gaps. After the field men finish up in a city, they return to Detroit, where they collaborate with the headquarters staff in the preparation of the data for presentation and in the development of conclusions. As an indication of the manner in which the studies are made, in the Boston survey, the field men spent three weeks on the ground and then two weeks at headquarters completing their part of the job.

The first step in analyzing a city is to arrive at an estimate of the potential of the market to be used in all subsequent steps in planning the distribution set-up. This estimate is called the planning potential. It represents not what the market will absorb in the best nor in the worst sales year; it represents a cross section of the market, the product, and the organization. In arriving at this planning potential, careful study is given to all local factors, which might have an influence in modifying the preliminary planning potential arrived at from figures.

Having established a planning potential, the expense which this volume will support, leaving a reasonable profit for dealers, is established. So also is the capital required to handle the business. At the same time, the field men are accumulating data from local sources, covering the traveling and buying habits of the people in the city for the subsequent determination of the natural market areas in the city.

The stage is now set for developing an ideal dealer set-up in a city for the line of cars produced by the division for which the study is being made. This ideal set-up represents a guide rather than a goal of attainment, and is extremely valuable, not only from the standpoint of laying out the present dealer set-up, but also as future modifications in the set-up may become necessary.

The final stage is the determination of what is called a practical set-up. This consists of taking each individual dealer that may at present be operating, and measuring his capital, expense, facilities, and capacity, against a definite location. In this way the practical set-up provides for a group of dealers, each of whom would be able to obtain a satisfactory net profit, and at the same time produce a satisfactory volume of business.

A presentation of the practical set-up is then made to the executives of

the division involved. It is at this time that an agreement is reached regarding each dealership, taking into consideration the equities of the dealer and of the division.

Carried out along the lines described, a plan of this character should go far to make the retail automobile business, the stable, substantial business it should be. Unfortunately in the past it has often been true in the industry that scant attention has been given to the fundamental importance of setting a dealer up initially so that his potential market, capital, overhead, and ability were in approximate balance.

Where these factors are in balance, there is no doubt that the individual dealer's chances of success are immeasurably enhanced. In the achievement of this balance, many see a strong influence toward a modification of the used car problem, because they are convinced that particularly where overhead overbalances potential as the result primarily of appointing too many dealers, over-allowances are inevitable. Individual dealers are forced to high-pressure the market to get enough volume to justify their overhead. Such a situation always results in destructive price competition.



*This much Derma-San
halts Oil Dermatitis*

YOU pour only 1 pint of Derma-San into every 35 gallons of cutting lubricant to keep this serious skin disease out of your shop. For Derma-San is 15 times more powerful than carbolic acid. That is why such a small amount sterilizes cutting oils—kills pus-forming germs before they enter cuts and scratches. When you consider how little is the cost of Derma-San protection, you cannot afford to be without it. Order a drum—today.

The HUNTINGTON  LABORATORIES *Inc.*

DENVER

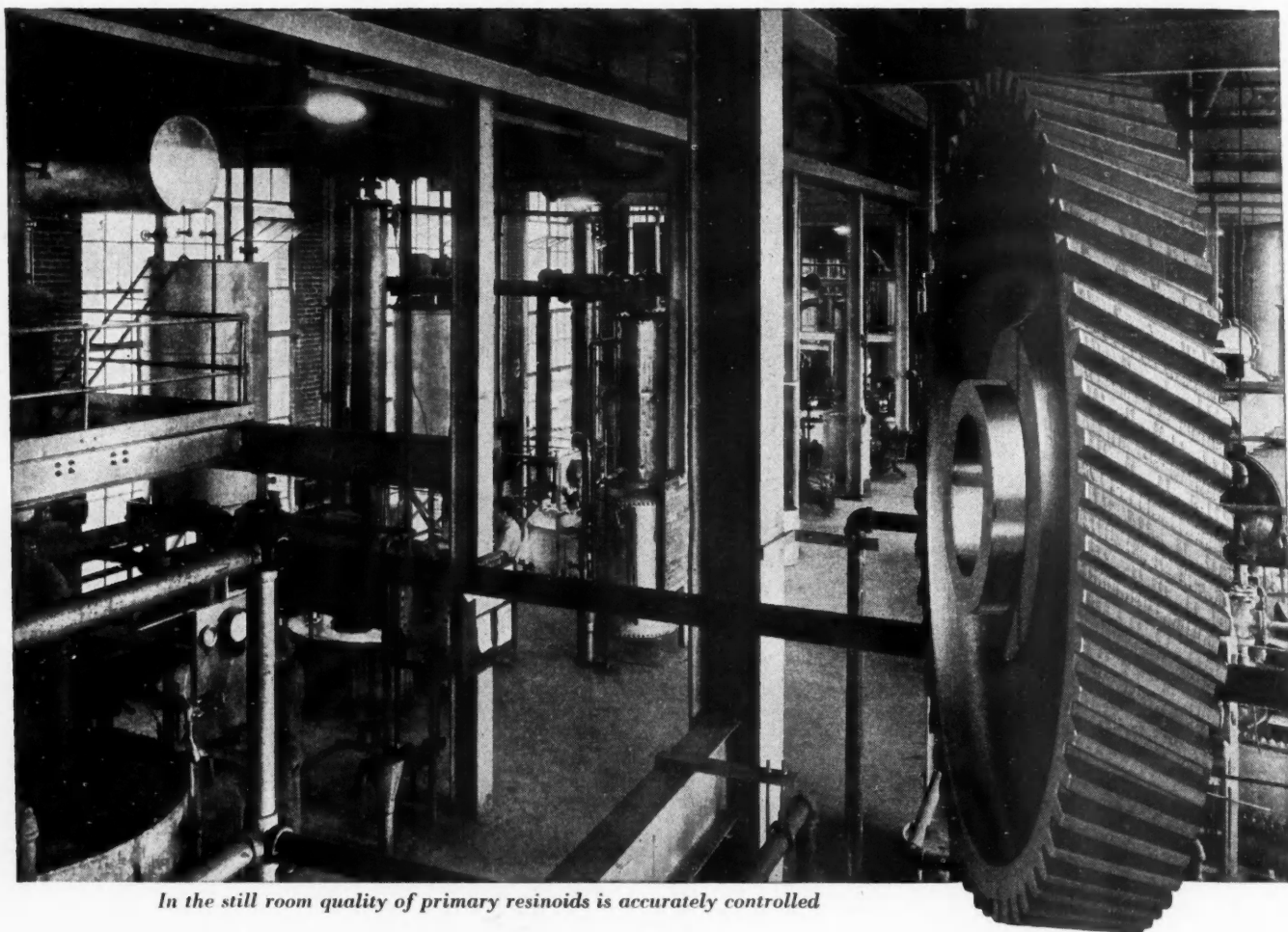
HUNTINGTON, INDIANA

TORONTO

DERMA-SAN IS EXCELLENT FOR ALL GENERAL PLANT SANITATION

GEAR QUALITY

begins at the Still



In the still room quality of primary resinoids is accurately controlled

MANY factors enter into the production of a tough, strong, long wearing laminated timing gear. Of these none is of greater importance than the impregnating resin employed. In a Bakelite Laminated Gear the control of quality begins at the "Still".

In the still room where primary resinoids for Bakelite Laminated Gears are produced, each still is

equipped with accurate and sensitive instruments to insure constant control of quality and uniformity, and also to provide an exact record of every run. This close control of the production runs of Bakelite Resinoid is inevitably reflected in the higher quality, the greater mileage of Bakelite Laminated silent timing gears.

In addition, Bakelite Laboratories

conduct unceasing research for the purpose of establishing increasingly high standards of Bakelite Resinoid uniformity and quality, and improving the technic of forming and processing Bakelite Laminated Gears.

We invite you to write for our 52-page booklet 10L, "Bakelite Laminated", illustrating and describing this material.

BAKELITE CORPORATION, 247 Park Avenue, New York, N.Y. 43 East Ohio Street, Chicago, Ill.
BAKELITE CORPORATION OF CANADA, LIMITED, 163 Du ferin Street, Toronto, Ontario, Canada

1910 - SILVER ANNIVERSARY - 1935

BAKELITE

"The registered trade mark shown above distinguishes materials manufactured by Bakelite Corporation. Under the capital 'B' is the registered symbol for reliability, or unlimited quality. It symbolizes the infinite number of present and future uses of Bakelite Corporation's product."

THE MATERIAL OF A THOUSAND USES

December 21, 1935

Automotive Industries